

Exploring culturally-determined food preferences of Indian and South Asian patients in New Zealand

Huda Aiman Mohamad Shahir

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Abstract

Background: The increase in the Indian and South Asian population in New Zealand creates demand for culturally appropriate hospital food services. As these peoples have rich food cultures, traditions, and strong religious beliefs and practices, it is important to explore these factors when identifying the food preferences appropriate for NZ hospital menu standards. Health Partnership NZ's national nutritional standards for adult inpatients are currently under revision; as part of this process, the District Health Board (DHB) Dietitians Leader Group need information on Asian groups' experiences and expectations of NZ hospital food services. This study investigates Indian and South Asian separately as the Indian population group dominates the South Asian population in New Zealand.

Objective: To determine and understand Indian and South Asian adults' food preferences when they are in hospital and their experiences of New Zealand hospital food service, to enable Food Services to better meet the food preferences of this ethnic group and thereby their nutritional needs.

Design: This exploratory mixed method study using focus groups, a questionnaire and semi-structured interviews, was undertaken with Indian and South Asian people living in Auckland. Three sequential phases were necessary to develop and administer a tool suitable for exploring Indian and South Asian patients' experiences, expectations and food preferences. A literature review and complementary online survey (Phase 1) with a small convenience sample (n=2), informed the development of topic areas for subsequent focus groups, questionnaires and interviews. In Phase 2 two focus groups were conducted with Indian and South Asian community groups based on religion; Hindu (n=8) and Muslim (n=7). Each focus group explored food preferences when well and unwell, and expectations of NZ hospital food services. Information gathered from

these two phases informed the development of the questionnaire and interviews conducted in Phase 3 to assess the participants' experiences of hospital food services and their cultural needs. Participants (n=20 tot: Hindu=7, Muslim=10, Sikh=3) completed a questionnaire and undertook a short qualitative interview.

Results: Thematic analysis of focus group transcripts indicated that three main themes captured factors influencing Indian and South Asian food preferences: religion, culture, and temperature and texture of the food. Findings highlighted preference for foods based on rice or roti with curry dishes, mainly dhal and vegetable curries. Similar findings were found in Phase 3 with a preference score of 80% for dhal curry and 70% for rice for foods participants would like to be offered in hospital. Interview results added Khichri, a traditional one pot rice and lentil dish, to this list of foods preferred when unwell. Overall religion emerged as exerting the strongest influence on food preferences. Specifically, Hindus require more variety in hospital vegetarian menu options, and Muslims had concerns regarding the source of food on Halal menu options. Hot temperature, and soft texture are key characteristics of food preferred when unwell.

Conclusion: The main findings of this study demonstrate that food preferences of Indian and South Asian adults when unwell, or in hospital, are influenced by religion and cultural food traditions. Preferred menu items and food service factors identified in this study provide the information required to enhance the national DHB adult menu standards and service specifications. Implementation of these changes will improve Indian and South Asian patients' hospital food service experience and food intake. To the best of our knowledge, this is the first study to explore food preferences of Indian and South Asian patients in New Zealand.

Preface

The current study explores the food preferences of Indian and South Asian patients to assist the review of current hospital menu standards include more culturally appropriate food choices. Alongside this study, a parallel study under the same overall project “My Food is My Medicine” was undertaken by another Master of Dietetics student, Gillian Lum. This study focused on the food preferences of Chinese and South East Asian patients in New Zealand.

Huda Shahir (student researcher), a Master of Dietetics student at the University of Otago, conducted the current study under the supervision of Dr Penny Field, primary supervisor, and Dr Alex Chisholm, co-advisor. The supervisor was responsible for the development of the project design. Ethical and other approvals were obtained by Dr Field with assistance of documentation developed by the student researcher. This project began on September 4th 2017 for ten weeks and re-commenced February 1st 2018 to June 30th 2018. Throughout this period, weekly Zoom meetings between the student researcher, supervisor and co-advisor took place to discuss the progress.

The student researcher was responsible for the following under supervision:

- Conducting a critical review of literature exploring the food preferences of Indian and South Asian
- Writing the research proposal
- Developing the food preferences survey with the other Master of Dietetics student researcher undertaking the parallel project, and publishing it online using the software Survey Monkey (Phase 1)
- Developing and refining the focus group schedule (Phase 2)
- Developing and refining the questionnaire and interview schedules (Phase 3)
- Preparing the study information packs for participants in Phase 2 and Phase 3

- Recruiting participants and conducting the two focus groups
- Administration of the questionnaire and conducting the interview with participants
- Transcription and qualitative thematic analysis of the focus group discussions and interview
- Collation and entry of questionnaire data
- Statistical analysis of the data
- Writing and compiling of this thesis

Pricilla Natalia, cultural advisor, assisted in the development of schedules for both focus groups and the questionnaire and interview, which were administered in Phase 2 and Phase 3. Stella Welsh, Counties Manukau DHB Dietitian facilitated liaison with DHB services.

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List of Abbreviation

AIAI	Auckland Indian Association Inc.
CMDHB	Counties Manukau District Health Board
DHB	District Health Board
FFQ	Food Frequency Questionnaire
FIANZ	Federal of Islamic Association New Zealand
g	gram
HDEC	Health and Disability Ethics Committee
kJ	kilojoules
MDiet	Master of Dietetics
n=	Number
NZ	New Zealand
NZMA	New Zealand Muslim Association
OECD	Organisation for Economic Co-operation and
Development	
OUSA	Otago University Students' Association
Q	Question
Q1	Question 1
Sd	Standard Deviation
UK	United Kingdom
US	United States

1. Introduction

The number of Indian and South Asian people living in New Zealand continues to increase. According to the New Zealand Census 2013, there were approximately 155,000 people identifying as Indian, and 20,000 identifying as other South Asian ethnicities, including Sri Lankan, Afghani, Pakistani, Bangladeshi, and Nepalese, residing in New Zealand (1-5). Indian was the second-largest Asian ethnic group in 2013, after Chinese, however growing at a faster rate and comprising 32.9% of the Asian ethnic group, up from 29.5% in 2006 (1). These populations, both immigrants and New Zealand born, originate from the geographically large region of South Asia which is currently home to an estimated 1.885 billion people (7). As these populations increase in number and age, their use of public health services will rise (8). The biggest growth has occurred in the Auckland region with nearly half of the Asian population in Counties Manukau (CM) Health identified as Indian in 2013 (9).

Indians and South Asians are known for their diverse religions and cultures which play a key role in their food preferences as each is subject to many different restrictions, traditions and habits (10). Therefore hospital food services need to understand these food preferences in order to provide appropriate menu selections for Indian and South Asian patients. In some countries such as the United States (US) and Canada, where there are many Indian and South Asian migrants, some investigations have been undertaken into food preferences in order to inform hospital food service menus (11, 12). In New Zealand, the only national hospital menu standards acknowledges the need for patients with cultural and religious dietary needs to receive appropriate food. However, these standards do not specify the types of food that are appropriate for any specific, non-European cultural group (13). As New Zealand is aiming to becoming a more ethnically and culturally diverse as a society, the DHB Dietitians Leaders Group

plan to review the menu standards to include food choices that are culturally appropriate for these growing population groups.

Despite the increase in the Indian and South Asian population in New Zealand, no research to date has explored their food preferences either when they are well, or unwell. Thus, a clear gap is identified in terms of the academic literature, which this project seeks to fill. The aim of this study was to determine and understand Indian and South Asian adults' food preferences when they are in hospital and their experience of New Zealand hospital food service to enable the food services to better meet the food preferences and thereby nutritional needs.

2. Literature Review

With the Indian and South Asian population in New Zealand predicted to increase further (14), New Zealand public hospital services need to be able to offer culturally appropriate care. To optimise nutrition and treatment outcomes, it is important that hospital menus cater for Indian and South Asian people's food preferences.

As little is known about the preferences of these ethnic groups in New Zealand, this literature review aims to:

- Characterise the population of Indian and South Asian people in New Zealand
- Review the food preferences of Indian and South Asian adults when they are well and unwell, and the impact of migration
- Briefly overview the current food service standards for New Zealand public hospitals, and the importance of food and nutrition to patient recovery

Relevant literature published in English between 1975 and 2018 involving human participants was sought via the databases: Scopus, Web of Science, Medline via Ovid and Google Scholar. The key subject headings used were “food preference” or “food habit” combined in various combinations with the following words: Indian, South Asian, migrants, dietary pattern, unwell, hospital, culture, questionnaire, survey, interview, and focus group. Additional literature was sourced through the reference lists of published journal articles.

2.1 Characteristics of Indian and South Asian people living in New Zealand

South Asia refers to the southern region of the Asian continent, consisting of countries including India, Pakistan, Bangladesh, Nepal, Sri Lanka, Maldives, Bhutan, and Afghanistan (15, 16). The population in South Asia is about one fourth of the world's population, making it one of the most densely populated geographical regions in the world (16). The number of people living in New Zealand who identify as Asian is increasing rapidly reaching about 11.8% of the total New Zealand population (Table 1), almost doubling in size since 2001 (1, 17). Within this broad group, Indians comprise about 33% of people identifying as Asian in the 2013 New Zealand Census. Of the 155,178 people who identified as Indian, about 24% were born in New Zealand, 43% were born in India, and the remaining 27% were born in Fiji (14). Table 2 shows the relative numbers of Indian and South Asian population ethnic groups living in New Zealand, and the percentage change between 2001 and 2013. As the Indian population group dominates the South Asian population in New Zealand, they are examined separately from other South Asia ethnicities. Defined by Statistics New Zealand, the "Indian" Asian category included people of Indian, Bengali, Fiji Indian, Gujarati, Tamil, Punjabi, Sikh, and Anglo Indian ethnicity (18).

Table 1. Total New Zealand population characterized by ethnic group (17)

Ethnic group ⁽¹⁾	Number	Percent
European	2,969,391	74.0
Maori	598,605	14.9
Pacific peoples	295,944	7.4
Asian	471,711	11.8
Middle Eastern, Latin American, African	46,953	1.2
Other ethnicity	67,752	1.7
1. People were able to identify with more than one ethnic group and therefore the percentages do not add up to 100		
2. Source: Statistics New Zealand		

Table 2. Population of Indian and South Asian ethnic groups living in New Zealand in 2013 (1-5).

Ethnic group ⁽¹⁾	2013 Census	Percentage change 2001-2006	Percentage change 2006-2013
Indian	155,178	68.2	48.4
Sri Lankan	11,274	18.5	35.7
Afghani	3,414	214.5	34.5
Pakistani	3,261	101.8	58.9
Bangladeshi	1,623	30.5	9.1
Nepalese	1,590	69.0	143.1
<p>1. Includes all people who stated each ethnic group, whether as their only ethnic group or as one of the several. Where a person reported more than one ethnic group, they have been counted in each applicable group.</p> <p>2. Source: Statistics New Zealand.</p>			

2.1.1 Population trends

New Zealand's total population is projected to increase from 4.4 million in 2013 to 5.8 million in 2038 with an average annual increase of 1.1 percent. The Statistics NZ (Stats NZ) projection data also predicts that the Indian population in New Zealand (0.18 million in 2013) will increase to 0.28-0.35 million by 2025 and to 0.35-0.47 million by 2038 (14). From the median projection, the Indian population will make up 7.1%, of the total population compared with 4% in 2013.

The population discussed in this review is adult, using the Ministry of Health criteria of people aged 18 years and above (18). Of the New Zealand's total population, the number of individuals aged 65+ years is projected to increase dramatically, more than doubling in number between 2013 and 2038 (14). From population group projections, the largest increase in median age is predicted in the Asian ethnic group, which includes the Indian population, rising from 30.6 in 2013 to 40.4 in 2038. This reflects the ageing of the large Indian cohort currently in their 20s (14). The increase in the older segment

of the Indian population is expected to result in their increased use of health services, with the Ministry of Health predicting that population ageing will bring significant increases in the demand for both primary and hospital health services (8).

2.1.2 Implications for health care services

Across New Zealand the proportion of Asians living in every region is increasing, however, the largest growth is in the Auckland region (1). From the 2013 New Zealand Census data ,it is evident a majority of the Indian ethnic group lives in the Auckland region (68.5% or 106, 329 people) (19), similar to the Sri Lankan ethnic group (61.2% or 6,903 people) (20). Within Auckland ethnic population group clusters exist, with the Counties Manukau DHB (CMDHB) in south Auckland serving a large Indian population. In fact the Indian ethnic group comprises 47% of CMDHB's total Asian population, compared to 23% in Waitemata DHB and 33% in Auckland DHB regions respectively(21). Figure 1 shows the distribution of ethnic subgroups of Asian population in Counties Manukau DHB region (21).

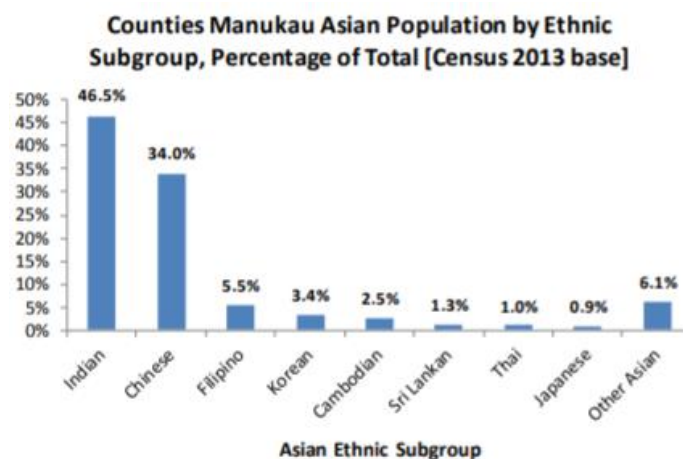


Figure 1. Distribution in percentage of ethnic subgroups in Counties Manukau

Knowing the diversity of Asian peoples living in the Counties Manukau DHB region, especially the high percentage of Indians focusses attention on their patient and family experience of Counties Manukau DHB health services (21). As the Indian and South Asian populations in New Zealand continue to increase, most are expected to access publically funded primary health care, and other health care services including hospital services (8).

2.2 Food preferences of Indian and South Asian adults when well and unwell

Indian and South Asian populations are known for their diverse cultural food choices which include various types of spices, ingredients and attention to the way food is cooked (22). Culture exerts a strong influence on Indian and South Asian people's food habits, and their food preferences when unwell. Religion and geography underpin many culturally determined food preferences.

In this thesis, the term 'unwell' is defined as presence of illness or health conditions which adversely affect a person's daily activities and/or when they need to be admitted to the hospital. The state of being unwell can arise from disease, surgery and childbirth. The term 'well' is defined as being free from any illness and/or debilitating health condition. The term ethnicity or ethnic group refers to people of the same descent and heritage who share a common and distinctive culture passed on between generations. Culture, however, describes the customs and social behaviour of a particular society encompassing language, religion, cuisine and social habits (23).

There are few studies on the food preferences of Indian and South Asian population in New Zealand. In this section, the overview of food preferences below is based on international literature.

2.2.1 Traditional food patterns influenced by religion and geography

Historically, many religions have influenced the food habits of Indian and South Asian people and continue to do so. India is known as the birthplace of Hinduism, Buddhism, Jainism, Sikhism, and many other religions, and approximately 80% of the population follow Hinduism. Other South Asian countries such as Bangladesh and Pakistan are predominantly Muslim with more than 90% of each population practicing Islam as their religion (24). In Sri Lanka, it was estimated that 70% of the population are Buddhist (24). In New Zealand, the most common religions for people identifying with the Indian ethnic group are Hindu (53.6% or 81,036 people), Sikh (12.5% or 18,951 people), and Islam (10.8% or 16,395 people) (19). Pakistani and Bangladeshi living in New Zealand are mainly Muslim (3, 4), and approximately 5000 people identifying as Sri Lankan are Buddhist (20). Statistics NZ reported in 2013 the number of people affiliating with Hinduism was (39.6%) and Islam (27.9%)(1). As the two most common religions of Indian and South Asian are Hinduism and Islam, where there are many contrasts regarding practices and beliefs, this section centres on these two religions, reviewing their dietary restrictions and beliefs.

The food laws, restrictions and regulations associated with each religion are the integral part of the food habits and preferences of these populations (6). Geography also plays a significant role. As South Asia is a large continent, with different countries and various parts of each country often having distinct geographies (climate, harvest land and coastal or mountainous terrain), these factors influence the staple food of the population (25, 26). Table 3 below summarises the traditional diet of major South Asian ethnic groups.

Hindu religion

Hindu religion is the oldest religion in the world, founded on reverence for life, non-violence and a belief in reincarnation (6, 27). Followers of Hindu are lacto-vegetarians and believe in non-violence to all forms of life (Ahimsa) (27). Hindu dietary restrictions include avoiding beef as cows are sacred, and any other type of meat and fish. Hindus also do not eat eggs since they are potentially a source of life. Food that contains animal product or substances such as rennet and beef gelatine are also excluded from their diet. Milk, yogurt and butter are normally consumed because their production does not involve killing the animal. Strict Hindus are unwilling to eat food unless they are certain that the utensils used in preparation and service of the food have not been in contact with any meat or fish. Less strict Hindus may consume chicken, lamb and fish (6).

Some devout Hindus will fast regularly during the week and on religious days. The frequency of fasting is determined by the degree of religious practice and by personal choice (28). Hindus usually fast for a single day (24 hours) or several days, from dawn to dusk. Fasting is “willingly abstaining from some or all food, drink or both”. Some may have one cooked meal a day or only eat foods such as yogurt and fruit, whilst others forego all food and may take fluids only (6, 27).

Islamic Religion

The Muslim community in South Asia is predominantly from Pakistan, Bangladesh, and some parts in India. Muslim dietary restrictions laid down in the Holy Quran are for animals to be ritually slaughtered while reciting the name of Allah (god) and then blood being allowed to drain (halal meat) (6, 29). All wholesome foods are Halal and do not require any special preparation other than they are clean and safe to consume. Unlawful (Haram) foods are food products from the pig and food containing ingredients and additives derived from the pig, and any animals that have not been ritually

slaughtered. This means that a wide range of manufactured foods containing gelatine, animal fats, or emulsifiers derived from animal sources will be avoided. The other unlawful food is alcohol, including that used in cooking and casual drinks. A Muslim might refuse a food if they cannot be sure that it does not contain unlawful ingredients. A devout Muslim will be concerned that the dishes used for cooking have not been in contact with unlawful foods. All fish is acceptable providing it has fins and scales (6, 27). However, there is some debate regarding the lawfulness of shellfish (30), therefore these food may need to be listed as an ingredient on a menu item so that individuals could avoid them if necessary.

Ramadhan (the ninth month of Muslim lunar calendar) requires Muslim to fast from dawn to sunset, and usually lasts for 29-30 days. Fasting involves abstinence from all food and drink and some Muslims might also stop smoking (6, 27). It is one of the pillars of Islam and considered as one of the highest forms of worship as it enables people to practice self-discipline and it helps them to appreciate and share the feelings of the poor and hungry (6). Muslims rise before sunrise to have a meal (sahur) similar to breakfast, and then break their fast at sunset (iftar) (27, 31). Those who are exempt from fasting include elderly people, children under 12 years, and chronically ill people. Women who are pregnant, breastfeeding or menstruating, and people who are ill or travelling during Ramadhan are also exempt, but are expected to compensate by fasting at some other time or donate and give food to the poor (6, 31).

Similarities and differences across the South Asia region

As evident from Table 3 below, most of the traditional diets across different ethnic groups are relatively similar (6). While each country in the South Asia region has common or traditional food that is part of their country's identity, many common dietary habits and food practices are evident (6, 27, 32, 33). Of note is the important

similarity of consuming rice and roti as the staple cereal in their diets, served with variety of curries (22). The main spices found in most curry powders of the Indian subcontinent are coriander, cumin, and turmeric. A wide range of additional spices are included depending on the geographical region and the food being included such as vegetables, meat, lentils and fish (34). There are many types of curries including different types of vegetables or meat, however, the most common is the lentil curry or dhal. It is the most important staple food in South Asian countries, forming an important part of Indian, Nepalese, Pakistani, Sri Lankan, and Bangladeshi cuisines (33). Dishes of Indian and South Asian peoples are known for their use of hot peppers, black pepper, cloves, cumin, coriander, garlic and ginger, and cooked with ghee (23, 27).

Table 3. Traditional diet of South Asian ethnic groups (6)

	Gujarat		Punjab		Pakistan	Bangladesh	Sri Lanka
	Hindus	Muslims	Sikhs	Hindus	Muslims	Muslims	Christians Buddhists Hindus
Main staple cereals	Rotali made from whole wheat flour Millet/Jowar/ cornflour White rice	Chapattis/roti made from whole wheat flour White rice	Chapattis/roti made from whole wheat flour or corn flour	Chapattis/roti made from whole wheat flour or corn flour	Chapattis/roti made from whole wheat flour White rice	White rice Rice flour	Red rice Red rice Flour Whole wheat flour White rice
Vegetables and fruit	Vegetables cooked in oil with spices Raita/pickles Fresh fruit	Vegetables cooked in oil with spices Raita/pickles Fresh fruit	Vegetables cooked in oil with spices Raita/pickles Fresh fruit	Vegetables cooked in oil with spices Raita/pickles Fresh fruit	Vegetables cooked in oil with spices Raita/pickles Fresh fruit	Vegetables cooked in oil with spices Salad/pickles Fresh fruit	Vegetables cooked in oil with spices Salad/pickles Fresh fruit
Meat	No beef Might eat meat	No pork Halal meat: chicken, mutton, lamb	No beef Mainly chicken and mutton	No beef. Might eat meat	No pork Halal meat: chicken, mutton, lamb, beef	No pork Halal meat: chicken, mutton, lamb	Pork Chicken Mutton Lamb Or lacto vegetarian diet
Fish	White fish	Little if any fish	–	–	Little fish	White/oily/dried	White/oily
Eggs	Not eaten by strict lacto vegetarians	Usually hard boiled, fried or omelette	Not a major part of the diet	Not eaten by strict lacto vegetarians	Usually hard boiled, shallow fried or omelette	Usually hard boiled, shallow fried or omelette	Hard boiled or omelette
Pulses and dals	Major source of protein	Important	Major source of protein	Major source of protein	Important	Important	Major source of protein
Dairy products	Semi skimmed milk, yoghurt, paneer	Semi skimmed milk, yoghurt	Semi skimmed milk, yoghurt, paneer (used for making savoury dishes)	Semi skimmed milk, yoghurt, paneer	Full fat milk or semi skimmed milk, yoghurt	Full fat milk or semi skimmed milk, yoghurt, paneer(used for making sweet dishes)	Full fat milk or semi skimmed milk, yoghurt
Fats/oils	Ghee Butter Groundnut/ sesame oil	Ghee Butter Groundnut/sesame oil	Ghee Butter Mustard oil	Ghee Butter Mustard oil	Ghee Butter Groundnut oil	Ghee Butter Groundnut/mustard oil	Ghee Butter Coconut/sesame oil
Cooking methods	Breads are cooked in a frying pan or on a griddle (tava) Shallow frying Deep frying Steaming Baking	Breads are cooked in a frying pan or on a griddle (tava) Shallow frying Deep frying	Breads are cooked in a frying pan or on a griddle (tava) Shallow frying Deep frying	Breads are cooked in a frying pan or on a griddle (tava) Shallow frying Deep frying	Breads are cooked in a frying pan or on a griddle (tava) Shallow frying Deep frying Tandoor (type of open oven)	Breads are cooked in a frying pan or on a griddle (tava) Shallow frying Deep frying	Breads are cooked in a frying pan or on a griddle (tava) Shallow frying Deep frying Steaming
Fresh herbs and spices are used by all the cultural groups in cooking and as garnish							
Note: South Asian communities in East Africa follow the traditional diet that is largely based on the area of the sub-continent from which they emigrated but might include some African starchy foods, e.g. green banana (matoke) and cassava in their diet.							

Though most of the dishes across this region are similar, geographical factors play a role in dietary habits or preferences. The greatest differences exist between southern and northern India (35). Southern India's climate is hot therefore the cuisines from this

region are usually rice-based with ‘wet’ curry or gravy, because grain grows easily in the area. Northern India, however, has a mixed climate and incorporates more breads. The breads are unleavened and include chapati, naan and roti (22, 35). Fish is strongly preferred by people from coastal regions of South Asia such as Kerala in India, Bangladesh and Sri Lanka. Fish is usually cooked in a lightly spiced gravy or curry in order to maintain the flavour of the fish and not to be overpowered by the spices added (32, 33).

2.2.2 Food preferences when unwell

As much as culture and religion influence usual dietary habits, they also heavily influence Indian and South Asian peoples food preferences when unwell. However, although there are an abundance of cultural and religious beliefs relating to food across the Indian subcontinent, not many are written or thoroughly researched to provide an exact or comprehensive understanding of these populations’ food preferences when unwell. One of the most widely-known beliefs of the Hindu religion is Ayurveda practices. According to Ayurveda concept, food is responsible for different aspects of an individual’s physical, temperamental and mental state. Regulation of diet is important as the whole body functions are believed to be the product of food consumed by an individual. Therefore, maintaining a healthy balanced diet is essential to stay healthy. Multiple ayurvedic therapies exist underpinned by Ayurvedic science which sees diseases as an imbalance of mind, body and spirit (36).

No research based literature was found on the particular type foods or dishes preferred by the Indian and South Asian population when they are sick or unwell. However, some food components or ingredients were commonly identified as promoting health and providing many health benefits when sick. Turmeric is one of the key ingredients or spices used in many Indian subcontinent dishes (37). According to India’s Food

Guidelines, other than giving flavour and colour to their dishes, turmeric has many health benefits including as antioxidant, anti-inflammatory and anti-cancer properties (22, 37). As grains are the staple food of the Indian subcontinent population, it is inevitable that most preferences for food when unwell will include some type of grain-based dishes (36). Idli is a fermented dish prepared from rice and black gram (bean) batter by steam cooking, consumed usually for breakfast or as a snack (36, 38). Unlike most Indian and South Asian dishes, idli does not contain oil or fat and so is suitable for the sick regardless of their disease. As the ingredients contain large amounts of fibre, and the preparation involves a fermentation process, idli is believed to aid digestion, therefore it is recommended for all age groups (36, 38). Another dish Khichdi or Khichri, is India's comfort food, which is a mixture of rice and lentils. Khichdi is usually consumed when Indians are sick, but also used to nourish babies and elderly people. It is free from heaviness and any tendency to cause flatulence. Containing cooked dhal or lentils Khichri is believed to be effective in healing and soothing the digestive system (39).

Islam has a few beliefs around certain foods being beneficial to health, or being consumed when unwell. Dates are honoured as one of the blessings of paradise in the Holy Qur'an. Muslims are urged to eat dates, as dates are believed to cure many diseases or disorders. Dates are a good source of fibre and have shown to contain antioxidant and anti-mutagenic properties (40). Another type of therapeutic food is honey, which is also praised in the Holy Qur'an for its healing ability. As honey contains a variety of vitamins, minerals, amino acids and antioxidants, it has been shown to possess antimicrobial properties as well as wound-healing activity (41).

2.2.3 Impact of migration on food preferences

Dietary acculturation is the process and extent to which migrants adopt the eating patterns and practices of the new environment (42). The diet quality of individuals who relocate to another country can be significantly influenced by acculturation. For example, in the United States, people from India have been shown to frequently select non-Indian foods and replace traditional foods with other ethnic or western foods (43). These changes are attributed to a number of factors, including exposure to a new environment which includes new foods and food sources. In addition, exposure to a new host culture may lead to collective changes in psychosocial factors, taste preferences, and food preparation methods leading to different dietary patterns. Dietary acculturation is also affected by sociodemographic and environmental factors, including duration in the host country, household income, and availability and accessibility of traditional foods (42). This is clearly illustrated in a study of the generation of Indians who immigrated to the United States before 3 years of age, not selecting Indian food for most of their meals and snacks (11). Bicultural practices were also evident in the same study with Indian immigrants consuming both Indian and Western foods rather than one replacing the other. Breakfast foods comprised mostly non-Indian foods, only some Indians included at least one Indian food for lunch, whereas most consumed a dinner meal comprising predominantly Indian foods (11). This was also seen in Pakistani immigrants in Norway where the cultural importance of breakfast and lunch has been shown to have diminished, however dinner retains culturally significant foods (44).

The acculturation of dietary patterns upon immigration contributes to increased risk of nutrition-related non-communicable disease, such as obesity, diabetes and heart disease among Indian and South Asian populations (45). In New Zealand, a study investigating

dietary habits of the Asian population reported that South Asians immigrants had a high percentage of energy from carbohydrates due to their predominantly carbohydrates-based diet (46). Consistent with the results of the New Zealand Health Survey (47), the NZ study also found that the South Asian population had lower fruit and vegetable intakes compared to NZEO (New Zealand Europeans and Others) and ESEA (East and South East Asians) groups (46). However, due to the health screening enforced by NZ immigration authorities, immigrants have a better standard of health upon arrival compared to the majority of population in their country of origin (18). This evidence illustrates the ‘healthy migrant effect’ which occurs among first generation immigrants who tend to have better health status than the local citizens (18, 48). However, the effect abates over time as acculturation occurs and the health status of migrants reduces with changing dietary patterns(48).

2.3 Current New Zealand hospital food service standards and the importance of cultural food to patients

The current New Zealand Hospital Adult Menu Standard is based on the New South Wales menu standard (13). The menu standard applies to all New Zealand contracted DHB food services. The standard includes nutrition goals for energy and protein on a daily basis with micronutrients averaged on a weekly basis. Meal choice and food examples for meals and snacks are given to help with menu design (13). However, there is no standard for the types of food that are appropriate for any specific cultural groups. In contrast in Scotland, all public body organisations, policies, procedures and practices, including National Health Services (NHS), are required to treat ethnic minorities fairly and equally. This requirement applies to hospital catering service standards (49, 50). Also, in Singapore it is standard practice in all hospitals to provide different menus for specific cultural groups, including Halal options for Muslim patients (51).

2.3.1 Importance of a culturally appropriate menu in hospitals

Along with the importance of nutritional and sensory quality of hospital food, offering culturally appropriate food is also necessary for several reasons. Providing familiar and acceptable food for diverse groups is a sign of respect, and will help increase patient satisfaction and reduce waste (52). This applies more to first generation immigrants as they are more emotionally connected to traditional food, compared to the younger generations (23). A study by Chapman et al examining the food practices of Punjab families in Canada, reported that older participants preferred Indian foods while the younger participants who were born in Canada preferred locally available foods that were common in the host environment (53).

In order to improve patient satisfaction with the hospital food services with respect to cultural food in the menu, trust is needed. According to Goold, trust in health care services, institutional trust, does not rely only on physicians, but also the facilities and services provided by institutions, in this context, hospitals (54). In relation to the consideration of ethical and religious needs of Indian and South Asian patients, Halal is an important issue for the Muslim population. A study by Madhok et al evaluating the provision of South Asian food in hospital in England reported that patients perceived little choice in the menu, and one of the reasons was due to trust in relation to the Halal food provided (55). The Muslim population needs to be able to trust the strictness of Halal in the food that is offered to them. A study in Malaysia looking at patient satisfaction with Islamic friendly hospitals found that, the practice of hospitals providing Halal food may instil confidence and the confidence of Muslim patients' in the Islamic medical ethics of the health care providers (56). A study in Belgium investigated trust of Muslims in information on Halal meat, and their confidence in key actors and institutions controlling the Halal meat chain. Findings indicated a high

percentage of participants displayed a clear preference for Islamic institutions to undertake monitoring and communication about Halal (57). Hospital food services in Singapore require that food ingredients must be Halal certified under the Islamic Religious Council in Singapore (51). In addition to Halal food items and products, other aspects of a food service must be considered in the production of Halal food including: preparing and storing of the Halal food which needs to be in a Halal environment, and clear demarcation put up to distinguish the Halal ingredients (51, 58). The Halal environment includes preparing food in a separate area, and not using the pots, pans and utensils with those used for non-Halal food (51). Such processes, Halal certification and labelling, enable Muslim patients to trust the Halal food provided in hospital (51, 56, 58).

2.4 Understanding Food Preferences and Experiences

Qualitative research is an approach that produces findings not derived from standard statistical procedures or other means of quantification (59). It is a naturalistic approach that seeks to understand phenomena in uncontrolled, context-specific settings, in which data are not numbers, but text, audio or visual (59, 60). Focus groups are one of the qualitative approaches widely used in health research to explore the perspective of patients and other groups in the health care system (61). They allow more in depth explanations on certain values and ideas which are important to evaluate preferences and expectations (62). Group discussion processes help people to identify and clarify views, and the ambience may encourage participants to comment and share opinions (63). Limited interactions between participants due to power differentials might result with agreement with their more powerful colleagues to avoid perceived retaliation. The focus group can lead to uncontrolled tangential discussion and produce irrelevant responses and data, especially when a moderator is less experienced. Therefore,

thorough preparation is needed to ensure the information gathered in the discussion is relevant to the study aim (63, 64). Focus groups are often included in mixed method studies to gain more information to inform the development of questionnaires (59). Quantitative analyses such as questionnaires are commonly used to assess patient food satisfaction and experiences, as they are reliable and effective in providing identification of the areas in hospital services that needs improvement (65). However, measuring and quantifying food service satisfaction is difficult due to the influence of many subjective variables, such as pain and loss of personal power. Therefore, semi structured interviews, or interview-derived questionnaires are often used to facilitate high completion rates, as done in many studies investigating patient experience (66). This mixed-method approach is reported to help in providing more thorough and critical explanations, giving more reliability and validity to the research findings. Employing more than one method to assess food habits and preferences, and combining an in-depth probing interview with quantitative methods has been shown to enhance the collection of valuable information on culturally-based practices (59, 67). Measurement tools identified in this literature review are outlined in Table 4.

Table 4. Relevant studies using qualitative and quantitative methods.

First Author (Year)	Study Title	Aim	Method used
Rajan Madhok (1992) (55)	Quality of hospital service: A study comparing 'Asian' and 'non-Asian' patients in Middlebrough	To compare 'Asian' and 'non-Asian' patients' experience of and satisfaction with non-clinical aspects of their hospital care, and to evaluate the effect of subsequent provision of 'Asian' food.	Questionnaire and Interview
Sumathi Venkatesh (2017) (11)	Food Behaviors and Dietary Acculturation of Asian Indians in the US	To examine food behaviours and dietary acculturation of Asian Indians in the US.	Qualitative focus group discussions.
Tonje Mellin-Olsen (2005) (44)	Changes in Food Habits among Pakistani Immigrant Women in Oslo, Norway	To provide information on dietary change and factors leading to these changes in Pakistani women after migration from Punjab, Pakistan to Oslo, Norway. Such information is important in designing appropriate strategies for dietary counselling	Focus groups
Iris A Lesser (2014) (45)	The Association between Acculturation and Dietary Patterns of South Asian Immigrants	To explore the role of acculturation in dietary patterns as well as awareness and knowledge of healthy nutrition among South Asian immigrants	Questionnaire

2.5 Conclusion

There are many factors influencing the Indian and South Asian peoples' food habits and preferences, and their preferences when unwell. As much as culture and geographical factors play a part, religion appears to exert a greater influence on their dietary patterns due to the practices and restrictions involved. With increasing numbers of the Indian and South Asian population living in New Zealand, it is expected many will be using the public health services, which include hospital food services.

3. Objective Statement

Knowing the food preferences of Indian and South Asian people when they are unwell is key to offering culturally appropriate menus in NZ hospitals. The demand for culturally appropriate food to be offered on hospital menus is expected to increase. Not only do culture and geographical factors influence food preferences, religious practices and restrictions appear to play a significant role in Indian and South Asian peoples' food habits and preferences. In order to meet the needs of Indian and South Asian patients, it is important for New Zealand DHBs to adapt and develop hospital menus to reflect these preferences. Through increased consumption of acceptable and enjoyable food the efficiency of treatment would increase and patients' experiences of their stay in hospital would improve.

Despite the increase of Indian and South Asian people in New Zealand, there is no research investigating their preferences, and their experiences of NZ public hospitals food services.

The primary aim of this study was to determine and understand Indian and South Asian adults' food preferences when they are in hospital, and their experience of NZ hospital food service.

The specific objectives were to:

1. Review the literature on Indian and South Asian peoples' food habits and preferences, and the factors influencing these preferences
2. Identify major themes relating to their food habits and culturally- bound food preferences when well and unwell, and their expectations of NZ hospital food services in order to develop a questionnaire.
3. Assess patients' experiences of hospital food services and identify food service factors that are important to the Indian and South Asian patients.

4. Subjects and Methods

This chapter opens with a general outline of the overall study design including all the ethics and other approvals granted to carry out this study. This is followed by a more detailed description of the methods used in each of the three phases; specifically the development of the data collection tools, participant criteria and recruitment, and the protocol for each method. The chapter concludes with an outline of data analysis methods and quality considerations.

4.1 Study Design and Ethical Approvals

4.1.1 Study design

This exploratory mixed method study used focus groups, questionnaire and interview methods to address the research question. The primary research question was to explore the culturally determined food preferences of Indian and South Asian patients living in New Zealand. Three sequential phases were conducted to inform the development of and then administer tools suitable for exploring the patients' experiences and expectations, while determining their food preferences. Phase 1 involved a review of published and grey literature which identified current knowledge on the food habits of Indian and South Asian adults living in New Zealand, and the general overview of their preferred food when unwell. As there was no literature specifically on the New Zealand context and acculturation is known to influence food preferences (11), Phase 1 included a small exploratory online questionnaire using a convenience sample of students at University of Otago. The survey was developed to explore the food preferences of Indian and South Asian populations residing in New Zealand, and whether these differ when they are unwell. This information was used in the development of the focus group topics for Phase 2, and questionnaire and interview question topics for Phase 3. The literature review identified that religious practices exerted a greater influence on dietary

patterns of this population. For this reason, Phase 2 involved focus groups with Hindu and Muslim Indian and South Asian adults to identify their general eating habits in New Zealand, changes to food preferences when unwell, and their expectation of New Zealand public hospitals. Analysis of focus group transcripts sought to identify the themes explaining their food preferences and inform the development of data collection tools used in Phase 3. Phase 3 involved a questionnaire and interview of Indian and South Asian patients in an Auckland DHB to gather information on food and food service needs of this population to inform the development of DHB national menu standards. The flow chart in Figure 2 below shows the sequential phases of this study.

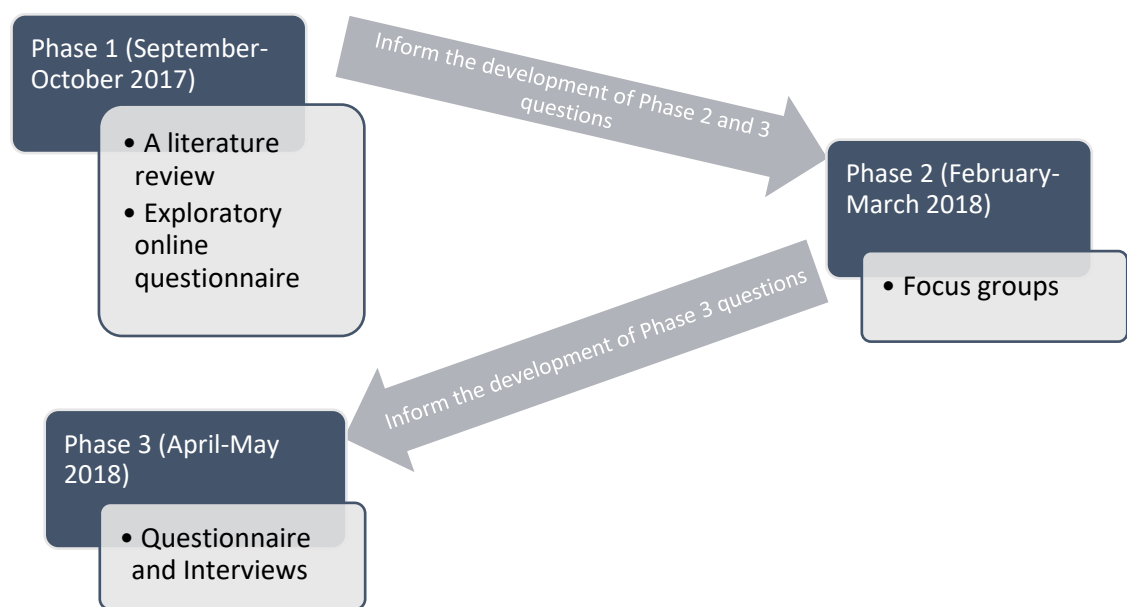


Figure 2. Flow chart of relationship between study phases

4.1.2 Ethical and Other Approvals

Ethical approval (Appendix A) for this research was obtained from the University of Otago Human Ethics Committee (Health), Dunedin (reference number HD18/001), amended on 16 January 2018. Additional ethical approval was obtained from the University of Otago Human Ethics Committee (Head of Department), Dunedin to carry

out the online questionnaire in Phase 1. Locality Authorisation was sought and obtained from the Counties Manukau DHB (Appendix A). It was acknowledged that this research did not require submission to the Health and Disability Ethics Committee (HDEC). The University of Otago Ngai Tahu Research Consultation Committee recognised that the project was not investigating responses from Maori (Appendix A).

4.2 Phase 1: Literature Review and Exploratory Survey

A review of published and grey literature identified the food preferences of Indian and South Asian populations living in New Zealand, and their preferences when unwell. This review offered background information on the type of food and the cultural influences on preferences. Research on food preferences and the cultural influences on food of Indian and South Asian living in New Zealand is very limited. The literature review relied heavily on research that was conducted in other countries especially the information on culture and religious influences, and the impact of migration on food preferences. These countries include South Asian countries, and OECD countries including United States of America, United Kingdom and Canada in which there are large populations of Indian and South Asian immigrants (68). Relevant research was obtained from repeat searching of three databases and Google Scholar, using combinations of several keywords, as detailed in Section 2 above.

In order to complement the findings of the literature review, a small exploratory online survey was carried out to understand the food preferences of the Indian and South Asian population residing in New Zealand and how it differs when they are unwell. This survey was done in conjunction with a survey of Chinese and South East Asian students as part of the overall “My Food is My Medicine” project.

4.2.1 Survey design

The survey content was suitable for four broad ethnic groups, Indian and South Asian, Chinese and South East Asian, and was tailored to suit target participants who were university students. The simple survey comprised a set of 8 questions administered through the online platform, Survey Monkey. Survey Monkey software was used to develop the survey because the system is easy to use and the layout is simple. The software provides options on multiple choice items to minimise respondent burden and make the responses more straight-forward and objective (69). Questions asked about the normal cuisine in their everyday diet, and what cuisines they would prefer when unwell. Overview of the questions are summarized in Figure 3 below.

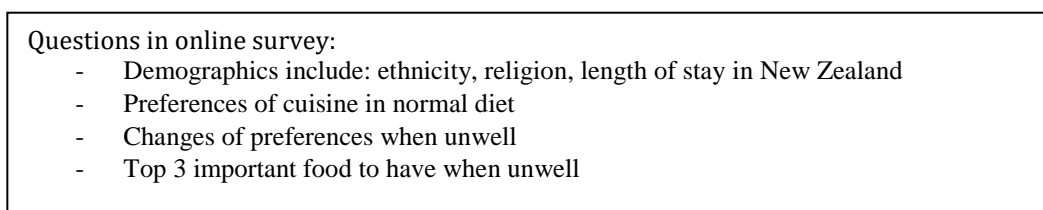


Figure 3. Summary of survey questions

Draft question items were carefully examined and revised where required following discussion with the study supervisors. The answer options listed represent all cuisines appropriate to Indian, South Asian, Chinese, and South East Asian people. The first four questions were about the participants' demography, as the questions include ethnicity, country of birth, religion, and length of stay in New Zealand. The demographic questions were derived from New Zealand Census 2013 questions. An 'other' response option was added to all closed items to reduce respondents guessing the correct answer. The last question was open ended asking about the important foods that they would have when they were unwell; to explore the specific type of food responses to gather more information. All items were forced response, therefore the respondents needed to answer all questions to complete the overall survey.

The survey was pretested with four Asian students from the MDiet class of 2017. The aim of the pre-test was to identify any confusing questions and whether they were relevant for the target participants. MDiet students were chosen as they fit the criteria of the target participants which are; students aged more than 15 years old, and are from Indian, South Asian, Chinese and South East Asian ethnicities. These students also do have more knowledge regarding food and food patterns, therefore they were suitable for identifying any confusing questions. A final version of the online survey is in Appendix B.

4.2.2 Participants and recruitment

The survey was conducted using a convenience sample of students aged more than 15 years, of the University of Otago, Dunedin. The participants were recruited from the Otago University Students' Association (OUSA) international student associations. The associations included Otago University Chinese Students' Association, Bangladeshi Students' Association, Otago University Hong Kong Students' Association, Otago Singapore Club, Otago University Thai Students' Association, New Zealand Otago University Taiwanese Students' Association, Otago University Sri Lankan Students' Association, Pakistan Students' Association, Otago Malaysian Students' Association, Otago Filipino Students' Association, Indonesian Community Association, and Indian Students' Association.

The survey was advertised by word of mouth, and direct contact with the representatives of the student associations. The representatives relayed the details by posting the survey link in their Facebook groups and promoting the participation of the survey. Participation in this online survey was taken as an indication of voluntary consent to participate. The participation consent was stated in the advertisement, as well as at the

beginning of the survey. The recruitment and data collection commenced on the 2nd October 2017, and was completed on 13th October 2017.

4.2.3 Data Collection

Item responses were compiled by Survey Monkey system and recorded in Microsoft Excel 2013 alongside the corresponding responses of the survey. The responses were grouped based on their ethnicities, and common themes were gathered from each group responses. The responses were analysed by the researcher. Responses on Question 8 were reviewed for common foods and used to guide and support the information found in the literature review for the development of focus group questions and questionnaire in the later phases of this study.

4.3 Phase 2: Focus Groups

The aims of the focus groups were to investigate:

- The food habits of the general adult population of Indian and South Asian living in New Zealand,
- How these change when they are unwell,
- Their expectations of New Zealand hospital food services.

4.3.1 Development of focus group schedule

Two focus groups were conducted with Indian and South Asian adults living in New Zealand. As Hindu and Islam religions have the largest increase of percentage of Indian and South Asian population according to New Zealand Census 2013 (1), separate focus groups were conducted for each religious group. This approach is supported by the literature review finding that religion plays a significant role in food preferences.

Key topics of the focus group schedule reflected the three main aims of the focus groups. The topics included: their common main meals and snacks in New Zealand, the

difficulties surrounding the sourcing ingredients and the preparation of their dishes, changes to dietary habits when unwell, and experiences and expectations towards hospital food services. As the focus groups were conducted in a conversational manner, probe questions were adapted and added as the discussion developed. Open-ended questions were used to promote group discussion. Draft questions had been discussed and reviewed by the project supervisors and the study cultural advisor to ensure they captured the overall aim of the focus group.

As part of the preparation for the focus group, two pilot tests were carried out with relevant participants who fulfilled the criteria, one for each religion groups. Those who participated in the pilot test were not among the actual participants, however, some new information gathered from these discussions was used in subsequent analysis to enhance the results. The objectives of the pilot testing were to assess the completeness of the focus group questions by identifying any missing areas that needed including, to identify problems participants faced when answering the questions, and the overall flow and structure of the focus group discussion (62). The pilot tests were carried out using the same protocol and guide as the actual focus groups explained in section 4.3. Pilot testing also helped the moderator and assistant moderator to practice their communication skills with participants, the timing of the discussion, and note taking in order to capture an adequate representation of the richness of the discussion (62, 70).

Revisions were made to the focus group questions based upon the pilot testing results to ensure that the questions were answered during the discussion in ways that yielded the information needed. The revisions made to the questions are included in Appendix C.

4.3.2 Recruitment and participants

Hindu Indian and South Asian

The Auckland Indian Association Inc. (AIAI) was contacted seeking their participation in the focus group, due to their large number of Hindu Indian and South Asian members. The study was briefly presented to their leading committee members before it was advertised to the members. It was then advertised via email by the committee member to the members in order to recruit participants for the focus group. When the participants attended the focus group they were given the information sheet and consent form (refer to Appendix C) which gave them the option to decline participation.

Eight Hindu Indian and South Asian adults, four males and four females, were recruited to participate in the focus group. Six to ten adults is thought to be the optimal focus group size in order to obtain the relevant themes and maximise interaction in the discussion (70). The age range was 40-79 years and all belonged to the ethnicity 'Indian'. They were all Hindu and it was identified during the focus group that most of them were vegetarian, while one practiced non-vegetarian eating once in a while.

Muslim Indian and South Asian

The Asian Network was contacted on the advice of the study cultural advisor. Contacts from the Network then provided a link to a Muslim social service society as they handled social events for the Muslim population in Auckland. The study was introduced to the leading society committee members before it was advertised to members. The focus group was then advertised via email, group chats, and during society social events. Similar to the Hindu focus group, when participants attended, they were given an information sheet and a consent form which gave them the option not to participate. It was planned to use the consent form to determine whether each participant could be

included, and the absence of the signature would have excluded participants from the study.

However, only two participants attended the focus group due to working schedules as it was held on a weekday, and the availability of the venue which was only available on that particular day and time. They were two female Muslim adults, and were of Pakistani ethnicity. The focus group was still carried out as planned. As an optimal number of participants for a focus group is 6-10 people, another focus group was carried out. A focus group with 6-10 people strengthens the themes discussed, as well as providing a greater variety of information on the topic (70).

The New Zealand Muslim Association (NZMA) was contacted to request their participation in the second focus group. The study was introduced to the leading committee member, and was then advertised to the members after an agreement with the president of the association. The participants were recruited via emails and word of mouth. Seven Muslim Indian and South Asian adults participated in the focus group, consisting of all male participants. The age range was 30-79 years with four of them belonging to the Indian ethnicity, together with two Bangladeshi and one Sri Lankan.

4.3.3 Conducting focus groups

The researcher developed a focus group guide that was used as a structure for the discussion as recommended by Kruger and Casey (70) (refer Appendix C). The researcher (the moderator) conducted the focus group with support from an assistant moderator, MDiet student on parallel study. The moderator explained the study and the aim of the focus group to encourage participation and motivate the asking or answering of questions. Some ground rules and the importance of anonymity were explained before the group commenced to make sure the participants understood how the focus group was conducted to encourage them to share as much information as possible. The

participants were informed that their identity would be kept confidential and the transcript of the discussion would retain anonymity. If they consented, the participants filled out a short demographic questions (refer to Appendix C). These questions will provide context to the results and help to categorize the information provided during the focus group.

Setting

The venue for the focus group was provided by the association. The participants were arranged at a round meeting table, with moderator and assistant moderator facing the participants. Two audio recorders were placed at the middle of the each ends of the table to capture the maximum audio from the discussion. Refreshments were served at the beginning of the focus group then placed in the middle of the table. This was to create a more relaxed and comfortable environment during the discussion as the participants could have the food while taking part in the discussion.

Discussion

The focus group discussion was divided into three parts: their normal eating habits, food they would have when unwell, and expectations of hospital food, to make sure that the discussion was not out of topic. Both of the focus groups lasted approximately one hour. The moderator lead the discussion by using the questions developed in the focus group schedule. The question route strategy was used, in that the questions were written out in complete, conversational sentences, as this is the most suitable method for a less experienced moderator (71). However, the probe questions were written in point form as it is easier to prompt when any topic raised. Having the probe question created discussion between the participants, therefore more detailed information was yielded throughout the discussion (71). The overall focus group schedules for both the Hindu and Muslim Indian and South Asian population were included in Appendix C. Data

resulting from focus groups expanded the information gathered from the literature review and online survey in Phase 1.

4.3.4 Data collection

The focus group was audio recorded and the moderator noted down important points by hand during the discussion. The assistant moderator took notes throughout the discussion, and summarized the main themes obtained. Any additional questions were also asked if the moderator missed anything out. Notes taken during the focus group were immediately checked for accuracy using the audio recording. The moderator transcribed the focus group discussion using the ‘intelligent verbatim’ style in which the audio was transcribed as it is, however leaving out fillers, nonverbal communication, and ambient sounds, while maintaining the flavour and gist of the discussion. The transcription and handwritten notes served as a record of the focus group for data analysis.

4.4 Phase 3: Questionnaire and Interview

The questionnaire and interview aims were to:

- Assess Indian and South Asian patients’ experiences of hospital food services
- Gather information regarding their needs on food and food services to inform the development of DHB national menu standards.

In this phase, structured questionnaires and semi-structured interviews were carried out with Indian and South Asian patients. Food preferences identified in the focus groups informed the development of the questionnaire and interview questions (refer Appendix D). As food preferences is theoretical, it cannot be directly measured as a concrete and quantifiable concept more defined explanations are needed to support an idea or outcome. A mixed method of qualitative and quantitative approaches provides in depth

outputs in regard to this topic (66). The questionnaires report patients' experiences of hospital food services, while the interview provides explanations for the responses given on the questionnaire.

4.4.1 Development of Questionnaire and Interview

The process of the development of the questionnaire and interview included:

- defining the scope of the method,
- generating the items,
- reviewing the items,
- arranging the items in questionnaire and interview format (69).

The questionnaire items were developed from the information gathered in the literature review, the exploratory survey and focus group. The questionnaire covered aspects of experience through questions relating to hospital food and food services, which include overall taste, menu options, cultural food, temperature, timing and services. Some expectation questions were also included to provide a better understanding of the type of cultural foods that are appropriate and important for this population. As the focus group results informed the development of the questionnaire, the generation of items was derived from themes and comments obtained in the discussion. The questionnaire consisted in total of 33 items, divided into three sections:

Section 1: Experience of food and hospital food services (24 items)

Section 2: Expectations of food and hospital food services (2 items)

Section 3: Demographic background (7 items)

A Likert frequency scale with 5 options (“1 never” – “5 always”) was used in Section 1 for experience items. A “non-applicable” option was added (a total of 6 options) to items that may not be relevant to certain participants, either because they did not receive the service, or they did not choose the diet. Multiple choice items were used in Section

2 and 3, and the options that were included were derived from the information gathered in focus groups. An “others” option was added in order for the participants to specify any other additional answers that were not in the options. All items were constructed in past tense structure and positively worded.

The interview questions were derived from the questionnaire items. They aimed to gather detailed description of the cultural foods that the participants would like to be provided during the stay in hospital. This included details on ingredients, preparation of food, and the importance of factors revolving around their eating habits.

All items in both the questionnaire and interview were discussed and reviewed by the supervisors, statistician, and cultural advisor. Questionnaire pre testing is particularly important to improve the quality of the questionnaire design especially when researching a topic on which relatively little is known (72). The main purpose of pre testing the questionnaire was to assess the clarity and interpretation of individual items and the overall questionnaire, thereby contributing to face validity. The questionnaires were pretested with six Hindu and six Muslim Indian and South Asian members of staff at Middlemore Hospital. Revisions were made to the questionnaire based upon the pre-test results, mainly in the wording and the arrangement of the questions. The overall questionnaire and interview schedule are included in Appendix D.

4.4.2 Recruitment and Participants

Ten Hindu Indian and South Asian adults and ten Muslim Indian and South Asian adults were recruited to participate in the questionnaire and interview. These patients were admitted to Counties Manukau DHB (Middlemore Hospital or Manukau Surgery Centre) for surgery requiring at least two consecutive over-night stays.

Due to time restraints and availability of patients admitted, the criteria of the participants stated in the study protocol needed to be amended to achieve the proposed target number of participants. The following criteria were amended:

- Patients admitted for surgery requiring at least two overnight stays instead of “elective surgery”.
- The date commenced for recruitment changed to between April 30 and May 25.

Ethical approval was received for this amendment (refer to Appendix A).

As advised by the DHB dietitian due to the availability of eligible patients, the Hindu Indian and South Asian patient criteria were expanded to Indian and South Asian patients regardless of their religion, which include Hindu and Sikh, also Muslim Fiji Indian as they fulfilled the study requirement for Muslim Indians and South Asians.. These changes were to allow the study to achieve the optimal number of participants with relatively stable standard deviations and comparisons between two groups.

The recruitment process was carried out with the help of the Counties Manukau DHB dietitians who identified target participants to be recruited for the questionnaire and interview. The dietitian recorded the identified patients’ names and ward details against their individual code identifier. They explained the study to the identified patients and offered them the study information packs, which included an introductory letter, information sheet and consent form (refer to Appendix D).

Upon receiving the signed consent forms, the dietitian passed the patients names and ward details to the researcher. The consent form clearly stated that participating in this study was voluntary and they could refuse to join if they did not want to take part. The absence of their signature on the consent form would remove them from the eligible patient list and they would not be included in the study.

4.4.3 Administration of Questionnaire and Interview

On the day of expected discharge, the researcher approached the consenting patients on the ward to confirm their understanding of the study and their willingness to participate for both the questionnaire and interview. After the confirmation was received, the researcher gave the written questionnaire to the participants. Time given to complete the questionnaire was 25-30 minutes. The researcher returned to the participants' wards to collect the completed questionnaire, and did an overview of the questionnaire for about 5 minutes before proceeding to the interview session with the participants.

The interviews were conducted in their wards, with consent obtained from other patients if needed, and lasted between 15 and 20 minutes. Participants who were not able to communicate in English, were translated by Hindu-speaking dietitians for both the questionnaire and interview. Some participants needed other help by having the questionnaire read out to them. This was likely due to feeling tired or poor eyesight. After completing the interview, the participants were offered a supermarket voucher valued at \$20, and requested to sign a form showing that they had received the voucher.

4.4.4 Data collection

The questionnaires were sorted according to the participants' unique code identifier and the date completed. All interviews were audio recorded and important comments made by participants noted down by hand during the interview process. The interview was audio recorded using iPhone Voice Memo, and transferred to iTunes for analysis. The notes from the interviews were collated with their questionnaires to avoid any mix ups. The results of the questionnaires were entered in to Microsoft Excel to be analysed. The researcher selectively transcribed each interview, focussing on all information relevant to the research aim.

4.5 Data Analysis

4.5.1 Qualitative Data Analysis

Thematic Analysis

Data from the focus groups and interview were analysed using thematic analysis to identify, analyse and report patterns and themes within the data (73). Manual thematic analyses were undertaken using qualitative description with simple depiction of the food preferences and the factors influencing habits and preferences. The themes are presented in Results chapter. Transcript data were analysed by the researcher. The themes were based on the comment or ideas that were mentioned the most frequently or repetitively by participants during the discussion. The texts were coded or highlighted, and were grouped under individual themes to support and aid interpretation. Once the transcripts were coded, they were then summarized in tables to present findings of the focus groups and interview. The theme and code findings were used in the development of the questionnaire and interview.

4.5.2 Quantitative Analysis

Statistical Analysis

Data from the questionnaire in Phase 3 were collected on a spreadsheet using Microsoft Excel 2013. Section 1 questions were scored with a five-point Likert scale (1 being never and 5 being always; including 0 being non-applicable), and Section 2 questions were scored by the frequency of the options chosen. Statistical analysis was conducted using Microsoft Excel formulas. Descriptive statistics including mean, standard deviation, median, interquartile range, and percentages were calculated for questions in both questionnaires. Ordinal measurement scale items of Section 1 included mean,

standard deviation, median and interquartile range, while the nominal measurement items of Section 2 included the frequency and percentage of the data.

4.6 Quality considerations

As this study revolves around the qualitative approaches, the researcher maintained the principle of reflexivity which is the process of critically reflecting and acknowledging the role the researcher has on the research study. This is essential to remove any potential biases in which may impact the data and data analysis. The researcher was not involved in any recruitment process in both Phase 2 and 3, in which Phase 2 focus group was done by the committee member of the association and Phase 3 questionnaire was done by the study hospital dietitian. Those responsible for the recruitment ensured that all participants who met the requirements were contacted. In addition, to ensure the quality of the focus group transcripts, the transcripts were checked by the supervisor along with the themes coded, and cross-checked with the research partner, in order to maximise the neutrality and objectivity of the data gathered.

5. Results

This chapter presents the findings from all three phases of this study which sought to identify the culturally-determined food preferences for Indian and South Asian patients in order to inform the development of the New Zealand public hospital menu standard. As detailed in the Methods chapter, the results gathered in Phase 1 informed the development of focus group questions, and questionnaire and interview questions in Phase 2 and Phase 3 respectively. The findings from thematic analysis of focus group transcripts Phase 2 are presented under themes regarding the normal diet of Indian and South Asian people living in New Zealand, changes when unwell, and expectations of hospital food services. These results further informed the development of a questionnaire and interview administered in Phase 3. Results in Phase 3 are presented in subsections for food and food service experience in hospital and expectations of hospital food and food services.

5.1 Phase 1: Exploratory Online Survey

The survey obtained two respondents relevant to this study; one Indian student, and one Sri Lankan student from 67 potential respondents (the remaining 65 respondents were excluded from the analysis as they were Chinese and South East Asian). Respondent characteristics are presented in Table 5. No age or gender data was collected.

Table 5. Characteristics of respondents (n=2)

Ethnicity	Religion	Birth Country	n=2	Years in NZ (range)
Indian	Hinduism	India	1	3-9
Sri Lankan	Buddhism	Sri Lanka	1	> 10
NZ = New Zealand				

As the number of respondents was low, the findings were used as supplementary data to support the information gathered from the literature review to help develop questions for Phase 2 and Phase 3. The key findings from the survey of the two respondents, are presented in Table 6 below.

Table 6. Indian, South Asian Student Food Preferences

Questions	Indian respondent responses (n=1)	Sri Lankan respondent responses (n=1)
Cuisines commonly eaten	Chinese Thai Korean	Western
Changes when unwell	No	Yes
Cuisines preferred when unwell	Chinese	Chinese
Three important foods to have when unwell	Soup Hot pot Porridge	Indian food Sri Lankan food Pasta

The two respondents preferred different types of cuisines for their normal diet. No concrete conclusions were obtained regarding the Indian and South Asian food preferences from the online survey as the number of relevant respondents was so low. However, as shown in Table 2, both respondents preferred Chinese cuisines when unwell. While the Indian respondent listed soup, hot pot, and porridge as the three important foods that they would have when they are unwell, these foods are common to Chinese cuisines. However, the Sri Lankan respondent, listed Indian and Sri Lankan foods as their important food when unwell. Following these findings, the next phases of this study centred on investigating how Indian and South Asian people's food preferences change when they are unwell, specifically the type of food, the preparation methods, and the cultural reasons for these preferences.

5.2 Phase 2: Focus Group

Thematic analysis of the focus group transcripts generated three overarching themes, capturing the significant determinants and characteristics of foods preferred by the Indian and South Asian population living in New Zealand, including when they are unwell. The three themes are: religion, cultural dishes, and temperature and texture. This section presents the findings under each of these themes and highlights factors that are influential across theme categories. Sub-themes help to explain major themes and enable a clearer understanding of how the theme influences the food preferences of these populations. The demographics of participants in each focus group are presented in Table 7, and food preference themes are presented in Table 8. Results of the Hindu and Muslim focus groups are presented separately, and summary tables of the discussions are included in Appendix E.

Table 7. Demographics of focus groups participants

Characteristics	Hindu group (n=8)	Muslim group (n=7)
Gender		
Male	4	7
Female	4	0
Age range (years)		
30-39	0	2
40-49	1	1
50-59	2	1
60-69	4	1
70-79	1	2
Ethnicity		
Indian	8	4
Sri Lankan	0	1
Bangladeshi	0	2
Birth country		
India	7	4
Sri Lanka	0	1
Bangladesh	0	2
New Zealand	1	0
Years in New Zealand		
Less than 10 years	1	4
10-40 years	4	3
More than 40 years	2	0
Born in New Zealand	1	0

Table 8. Food Preferences when unwell by religion

Themes	Religion	
	Hindu group	Muslim group
Religion; diet type	Vegetarian	Halal
	Non-vegetarian	Non-Halal
Cultural influences	Curry dishes	Curry dishes
	Khichri	Soup and porridge
	Spices	Healing food
Temperature and texture	Light and simple	Light and simple
	Soft and liquid	Soft and liquid
	Hot temperature and fresh food	Hot temperature and fresh food

5.2.1 Influence of Religion

Hindu Indian and South Asian

This theme is a major explanatory influence for food preferences, as participants reported that most Indians practice vegetarian eating habits due to their religious belief, Hinduism. The majority of the participants stated at the beginning of discussion that they are vegetarian. As they are vegetarian, most of the foods that they prefer either when well or unwell, are vegetarian dishes. However, some include meat in their dishes. Chicken and lamb were the most common types of meat mentioned, sometimes fish, but not beef and pork, or any foods containing them.

“80% of them (Hindu Indian) would have vegetarian dishes, and the other 20% would have non-vegetarian food as they like the distinct flavour and food that they can chew more.”

Interestingly, the participants mentioned that those who practice non-vegetarian eating habits would choose vegetarian dishes at their initial stage of illness.

“Usually most Indian would have vegetarian dishes in their initial stage of illness, and after their health improves, they would have their non-vegetarian dishes.”

Muslim Indian and South Asian

For Muslim group members, Halal and non-Halal dominated the discussion. In Islam, no pork nor any pork substances, or alcohol are consumed. The participants were clear that they do have meat such as chicken, beef and lamb, however, it needs to be Halal. Halal meats are prepared in a religious way, where the animals are slaughtered with a prayer, while facing Qibla' (direction of Mecca) and bled immediately.

“We (Muslim) can eat chicken, beef and lamb, but not pork. But the meat needs to be Halal, which it needs to be slaughtered facing the Qibla' (direction of Mecca) and accompanied with a prayer”

The term Halal does not only apply to meat, it also includes foods that do not contain pork, any pork substances and alcohol, and prepared and stored in area separated from these items to avoid contamination. The Halal meat option provided in New Zealand hospitals did not provide complete assurance of authenticity to Muslim participants. Obtaining a certificate from the Federation of Islamic Association New Zealand (FIANZ) and having it labelled on the menu or packaging of the food would improve this issue. The certificate would give assurance to the patients the acceptable ingredients, and prepared in a Halal environment.

“When we are admitted to hospitals, usually we would still choose the vegetarian option, because we do not really trust the Halal meat that are provided there (hospital)”

“Having FIANZ to audit the kitchen and get the certificate from them would definitely give us the assurance that the food is Halal, like how most airline kitchens do.”

5.2.2 Cultural influences

Culture played a significant role in Muslim participants' food preferences. The preferred types of food or dishes that emerged during the discussion for all three main meals; breakfast, lunch and dinner, were mostly foods influenced by their culture. This section reports common foods, and how these food and ingredients influenced their preferences when they are unwell. Most participants do not have very distinct preference changes as they would have food that are familiar to them when they are unwell.

“The dishes that we (Hindu) cook for those who are sick are usually the same as every other day, maybe less spicy and lighter.”

“Our (Muslim) food preferences are the same when we are well or unwell, no changes. We would eat the same kind of food as it is more familiar to us and comforting.”

Hindu Indian and South Asian

Curry dishes

Curries were most frequently mentioned by participants as the type of food that they normally have, and the food that they prefer when unwell. Vegetable curry and dhal curry were the type of curries that most Indian and South Asian people would have for lunch and dinner. The common carbohydrate foods that they usually have with curries are rice and roti.

This group do not have any particular preferences for certain types of vegetable. They purchase seasonal vegetables as they are cheaper. Spinach was mentioned as the common vegetable that they would have when unwell.

“We do not have any preferences on the type of vegetables, usually just whatever that are in seasons”

“Whatever that are available in the market, cheaper and good quality”

Most participants have adapted to New Zealand’s vegetables, and use those in most of their cooking.

“We are adapted to most New Zealand vegetables to turn it into our own version of curries”

Dhal curry is commonly consumed by this ethnic group. Mung dhal, or mung bean lentils are commonly used with the lentils being soaked in water before preparing the curry.

For non-vegetarians, meat is often cooked in curry dishes, chicken and lamb are preferred. Some participants reported that they will have fish, but it is not very common.

“We include meat such as chicken, lamb, and sometimes fish. We would probably cook them every second day (alternate with vegetarian dishes).

For fish, sometimes I would crumbed it as my family would not want curry all the time”

Khichri

Khichri is a type of dish originating from the Indian subcontinent, and it is very common for people to have it when they are sick. It is rice and dhal cooked together, and some participants would complement it with yogurt or yogurt curry. It has a porridge-like consistency, and the taste is lighter compared to the normal Indian dishes. Khichri is often preferred when unwell as the texture is soft making it easy to chew and digest by patients.

“It is rice and lentils mixed together, and cooked like a porridge consistency, and sometimes have it with yogurt curry. It is like a porridge therefore you do not have to chew it”

“It is to make digestion easier, and patients do not have to chew solid food”

Spices and ingredients

Indian and South Asian foods have distinct flavours which incorporate many cultural or traditional spices. The term ‘Indian spices’ was often mentioned in the discussion, such spices include garlic, ginger, coriander, cumin, and chili or chili powder. These spices are often added into dishes, especially curries. Most of the curries mentioned in the curry dishes section, are prepared in the same way, with the same kind of spices.

“Most of our curries are prepared the same way, and we use the Indian spices for most of our dishes – garlic, ginger, coriander, cumin and chili”

Participants emphasised that most Indians prefer spicy food, the ingredients or spices that they always use are chili, ginger and garlic. However, for those who are unwell, less of these ingredients are added.

“To make it spicy we would add chili, garlic and ginger. But usually we would add less of those as it is not good to have very spicy food when you are unwell”

Another type of spice that was often mentioned was Masala powder. Masala powder is a mixture of ground ginger, cardamom, black pepper, cinnamon and nutmeg. It is a powder consumed with tea. They would have Indian Masala every day, including when they are not feeling well or having a cold, as the powder warms up the body.

“Usually when we are sick, we will have Masala tea, it helps to warm up our body”

“The tea if you are making it at home, you add Masala powder into your tea. So the powder includes, ground ginger, cardamom, black pepper, cinnamon and nutmeg. You can add milk and sugar to it. “

Turmeric is another ingredient that is essential in Indian and South Asian food. Most dishes include turmeric or turmeric powder, turmeric may be included in drinks such as

in tea, or with water. Most participants believe that turmeric is full of antibodies, and has anti-cancer properties, therefore they consume it in their everyday diet.

“First thing in the morning I will have a teaspoon of turmeric powder with warm water, every morning.”

“I have been having fresh turmeric and ginger, grated, and boiled it with tea bag, and add some milk to it.”

“Turmeric is full of antibodies and anti-cancer”

Muslim Indian and South Asian

Curry dishes

Similar to the Hindu Indian and South Asian group, curry dishes were the most common dishes consumed by Muslim focus group participants. Vegetable, dhal and meat curries are consumed in their normal diet, including for breakfast, lunch and dinner.

The commonly consumed vegetables are butternut, pumpkin, kumara, potatoes, cauliflower and broccoli. However, most participants normally purchase and consume seasonal vegetables as they are often cheaper. Therefore, they do not have any strong preferences on the types of vegetable. They incorporate most vegetables sold in the supermarket into their dishes.

“We usually would have butternut, pumpkin, kumara, potatoes, cauliflower, broccoli, but actually anything seasonal as it is cheaper”

“Most of us can have any type of vegetables, even the frozen mixed vegetables, we can incorporate it into our dishes”

Dhal curry is consumed frequently by this ethnic group. Lentils and chickpeas are often used in these curries.

“Other than vegetable curry, we also often have dhal curry, and we usually use lentils or chickpeas. Most of our curries are prepared the same way”

Most Muslim Indian and South Asians have meat in most of the curries consumed for main meals. The meats are usually chicken, lamb and beef. Bangladeshi participants preferred fish as they are used to having more fish in their home country. The fish commonly mentioned was mullet roe, but any type of fresh fish from the local market, such as mullet roe and salmon is acceptable.

“Meats are usually cooked in curry dishes, usually chicken, lamb and beef.”

“Bangladeshi people would have more fish in their dishes, as we are more used to having fish back in our country. But we do have the other meats as well”

These curries are eaten with either rice or roti. Basmati rice was preferred by Indian participants. Bangladeshi participants prefer parboiled rice, whereas the Sri Lankan participants prefer Samba rice. However, most participants were not very particular about the type of rice, as long as it is properly cooked.

“Most of us usually eat Basmati rice, but we are not very particular with the type of rice as long as the rice is not under cooked and hard to chew”

Soup and porridge

Meat and vegetable soup or rice porridge were mentioned frequently as a common dish to have when feeling unwell. The common ingredients are carrots and beans, or mixed vegetables with meats such as chicken or beef. The vegetables and meat are cut in fine pieces, and cooked for some time to make them soft and tender.

“Soup and porridge are very common for us when we are not feeling well. We usually add meat such as chicken and beef, and vegetables such as carrots, beans or mixed vegetables”

“Some would have rice porridge or congee as it is more liquid compared to eating normal rice, and it is easier for the patient to chew and swallow”

Healing food

Dates and honey were the common healing foods for most Muslim participants. This was not based only on their religious beliefs, but is believed to have many health benefits. The participants believed that dates and honey are good for a range of health conditions.

“Dates and honey are what we considered as healing. As it is mentioned and practiced by our prophet, Muhammad SAW, they also have many benefits like for diarrhoea, stroke and anti-inflammatory diseases”.

5.2.3 Temperature and texture of food

Both groups reported similar preferences regarding the temperature and texture of the food they prefer when unwell. Most Muslim group participants prefer foods that are light in flavour, with minimal amount of spices compared to their normal dishes.

“Usually when we are sick we do not really eat a lot of spices, we do not add much of them in our dishes. We would prefer more light and simple food”

The Hindu group considered dhal curry or vegetable soup as light food when minimal spices were added.

“We prefer light food, light means like dhal curry or soup, and with little chillies. We usually would still like a little bit of spiciness in our dishes”

All participants in both groups preferred soft and liquid food when they are unwell. The preference was for food that is not solid, and does not require much chewing, and is easier for digestion. Hindu participants preferred Khichri as it has soft texture, and the Muslim participants preferred soup and rice porridge. Some Indian participants in the Muslim group did mention Khichri as one of their preferred dishes.

Regarding the temperature of food, both Hindus and Muslims strongly preferred the food to be hot and freshly cooked. Hot food would be comforting and make them feel better when they are unwell.

“Generally, when we are not well, we would have something that is hot and fresh, not food that are from the fridge and warmed up. We would prefer to have the food fresh as soon after it is cooked”

“We would prefer it hot, like steam hot. If you are sick or having a cold, hot food will comfort us and make us feel better”

5.3 Phase 3: Questionnaire and Interview

Results from the inpatient experience and expectations questionnaire are presented below together with results from the qualitative interviews where the same topic was explored.

Table 9. Characteristics of Phase 3 inpatient participants

Characteristics	n=20	%
Gender		
Male	10	50
Female	10	50
Age range (years)		
20-29	1	5
30-39	4	20
40-49	6	30
50-59	3	15
60-69	4	20
70-79	2	10
Religion		
Hindu	7	35
Islam	10	50
Sikh	3	15
Ethnicity		
Indian	12	60
Fiji Indian	8	40
Birth country		
India	11	55
Fiji	8	40
Bangladesh	1	5

Continued Table 9

Characteristics	n=20	%
Years in New Zealand		
10y	2	10
10-40y	16	80
40y	2	10
Nights admitted		
2-3n	12	60
4-5n	5	25
6+	3	15

A total of 20 patients recruited from Counties Manukau DHB completed the questionnaire and questionnaire-derived interview regarding experiences and expectations of hospital food and food services. The patients' age range was 20-79 years (30% were 40-49 years) with an equal number of male and female. Ten patients were Muslim, seven Hindu and the remaining were Sikh, with 60% identifying as Indian and 40% as Fiji Indian. The majority of participants had lived in New Zealand for 10-40 years (80%). All participants were in hospital for more than 2 over-night stays, beyond being admitted for surgery no clinical data was obtained. The demographic profiles of participants are shown in Table 9 above.

The questionnaire was divided into three sections; experiences, expectations, and demographics. The Likert scale options for experience questions were scored 1-5, and some question scored 0-5 (include "non-applicable" option). The scores for each option are shown as percentages in Table 10 below. Higher scores represent better experiences of food and food services during participants stay in hospital. The total mean score and median score (25th-27th quartile) are presented in Table 11.

Table 10. Patient Questionnaire Responses by question (%)

Questions	Never	Rarely	Sometimes	Mostly	Always	Non-Applicable
Q1. Food similar	45	25	30	0	0	NA
Q2. Flavour similar	45	35	20	0	0	NA
Q3. Food brought in	20	5	35	20	20	NA
Q4. Menu options						
Breakfast	15	15	15	25	30	NA
Lunch	15	15	30	10	30	NA
Dinner	15	15	30	20	20	NA
Q5. Cultural menu options						
Breakfast	80	15	5	0	0	NA
Lunch	55	20	25	0	0	NA
Dinner	55	20	25	0	0	NA
Q6*. Variety Halal options	5	10	15	5	10	55
Q7*. Halal meat option	10	10	15	0	0	65
Q8*. Taste of vegetarian meals	10	20	25	25	10	10
Q9*. Taste of non-vegetarian meals	0	5	15	15	0	65
Q10. Like the way vegetables are cooked	5	25	25	30	15	NA
Q11*. Like the way meats are cooked	15	5	10	20	0	50
Q12*. Like the way fish is cooked	5	5	10	25	5	50
Q13. Rice served	25	20	45	10	0	NA
Q14. Curry option	35	25	40	0	0	NA
Q15. Fresh spices used	40	15	20	20	5	NA
Q16. Fruits served	25	0	20	35	20	NA
Q17*. Like the soup served						
Breakfast	20	0	10	15	15	40
Lunch	15	10	10	10	30	25
Dinner	20	5	10	15	20	30
Q18. Indian Masala tea offered	95	5	0	0	0	NA
Q19. Hot food served hot						
Breakfast	25	5	10	20	40	NA
Lunch	0	10	10	35	45	NA
Dinner	0	5	15	35	45	NA

Continued Table 10

Questions	Never	Rarely	Sometimes	Mostly	Always	Non-Applicable
Q20**. Similar timing to home						
Breakfast	15	15	55	5	10	NA
Lunch	5	10	75	10	0	NA
Dinner	10	25	55	10	0	NA
Q21. Similar cutlery available	15	5	25	25	30	NA
Q22. Staff culturally respectful	0	10	15	5	70	NA
Q23. Same amount of eaten	15	25	30	25	5	NA

Abbreviation: Q- question from questionnaire

*percentage calculated include "not applicable" responses

**response options – "much earlier-much later"

Table 11. Descriptive Statistics of responses by question (mean, median)

Questionnaire Questions	Section 1. Experience Questionnaire Score (n=20)	
	Mean (sd)	Median (25 th , 75 th percentile)
Q1. Food similar	1.85 (0.85)	2 (1, 3)
Q2. Flavour similar	1.75 (0.77)	2 (1, 2)
Q3. Food brought in	3.15 (1.35)	3 (2.75, 4)
Q4. Menu options		
Breakfast	3.40 (1.43)	4 (2, 5)
Lunch	3.25 (1.41)	3 (2, 5)
Dinner	3.15 (1.31)	3 (2, 4)
Q5. Cultural menu options		
Breakfast	1.25 (0.54)	1 (1, 1)
Lunch	1.70 (0.84)	1 (1, 2.25)
Dinner	1.70 (0.84)	1 (1, 2.25)
Q6*. Variety Halal options	1.40 (1.77)	0 (0, 3)
Q7*. Halal meat	0.75 (1.13)	0 (0, 1.25)
Q8*. Taste of vegetarian meals	2.75 (1.44)	3 (2, 4)
Q9*. Taste of non-vegetarian meals	1.15 (1.62)	0 (0, 3)
Q10. Like the way vegetables are cooked	3.25 (1.13)	3 (2, 4)
Q11*. Like the way meats are cooked	1.35 (1.62)	0.5 (0, 3)
Continued Table 7		
Q12*. Like the way fish is cooked	1.70 (1.87)	0.5 (0, 4)
Q13. Rice served	2.40 (0.97)	3 (1.75, 3)
Q14. Curry option	2.05 (0.86)	2 (1, 3)
Q15. Fresh spices used	2.35 (1.31)	2 (1, 3.25)
Q16. Fruits served	3.25 (1.44)	4 (2.5, 4)

Continued Table 11

Questionnaire Questions	Section 1. Experience Questionnaire Score (n=20)	
	Mean (sd)	Median (25 th , 75 th percentile)
Q17*. Like the soup served		
Breakfast	1.85 (1.96)	1 (0, 4)
Lunch	2.55 (2.01)	2.5 (0.75, 5)
Dinner	2.20 (1.96)	1.5 (0, 4)
Q18. Indian Masala tea offered	1.05 (0.22)	1 (1, 1)
Q19. Hot food served hot		
Breakfast	3.45 (1.63)	4 (1.75, 5)
Lunch	4.15 (0.96)	4 (4, 5)
Dinner	4.20 (0.87)	4 (4, 5)
Q20**. Similar timing to home		
Breakfast	2.80 (1.08)	3 (2, 3)
Lunch	2.90 (0.62)	3 (3, 3)
Dinner	2.65 (0.79)	3 (2, 3)
Q21. Similar cutlery available	3.50 (1.36)	4 (3, 5)
Q22. Staff culturally respectful	4.35 (1.06)	5 (3.75, 5)
Q23. Same amount of eaten	2.80 (1.12)	3 (2, 4)

Abbreviation: Q- question from questionnaire

*percentage calculated include "not applicable" responses

**response options – "much earlier-much later"

Overall responses on the similarity of type and flavour of food compared to the food usually eaten at home were negative for all groups, with 45% scoring "never" and a total mean score of 1.85 (0.85) and 1.75 (0.77) for questions 1 and 2 respectively. Regarding the options available on hospital menu, for 80% of participants, no menu options met their criteria for Indian and South Asian foods for breakfast, and more than 50% of participants recorded "never" for Indian and South Asian options on the lunch and dinner menu. The total mean score for Indian and South Asian menu option availability was less than 2 for all three meals; breakfast, lunch and dinner (mean (sd): 1.25 (0.54); 1.70 (0.84); 1.70 (0.84) respectively). The Halal option questions, Q6 and Q7 included a "non-applicable" option if participants did not choose Halal option for their menu. For Q6, 5% of participants recorded 'never' which indicates that they did not identify halal options as being available on the menu, and 55% recorded 'non-

applicable' as halal was not relevant to them. For Q7, of participants 65% recorded 'non-applicable' as halal meat options for lunch and dinner were not relevant, and 10% never recognised these as available options on the menu. More than 50% of participants recorded that the Halal option was not applicable to them, indicating that some Muslim participants did not choose the Halal option menu. Table 9 (characteristics of participants) shows 50% of participants in Phase 3 are Muslims. The interview explored the Halal menu option provided by the hospital, and some Muslim participants would opt out the Halal options and choose vegetarian instead, as they did not have confidence in the food being Halal. This was reported mainly due to the preparation site and storage, and the absence of certification from FIANZ.

*"The hospital did say that they have Halal meat, but I do not trust their
"Halal". They do not have certificate from FIANZ and I do know that they
prepare the food with the same pots and pans used for pork dishes."
"I do not really trust their Halal meat. I would rather prepare my own
meat."*

In relation to family or relatives bringing in food during their stay in hospital (Q3) (35%) of participants recorded that they 'sometimes' would have food brought in (total mean score of 3.15 (1.35)).

The Indian and South Asian participants who chose vegetarian options rated the taste of vegetarian dishes received during their stay (Q8) as being "sometimes" (25%) and "mostly" (25%) acceptable. A total mean score of 2.75 (1.44) was generated for the taste of vegetarian dishes, and a mean score of 3.25 (1.13) for the way the vegetables were cooked (Q10). These topics were explored further in the interview, with most participants finding the food generally bland and overcooked. Some participants wanted

the food to have more taste, while others did not have any complaints, as they believed that hospital food is supposed to be healthy.

“The food is tasteless, but I do think that it is better for patients. It is healthier because they do not put a lot of salt or sugar in it”

The availability of rice and curry menu options varied from week to week. As the hospital follows a cycle menu, it is possible that some of the patients would have been offered rice or curry during their stay, and some would not. More participants scored “sometimes” for being able to choose rice than any other option for Q13 (45%). Similarly curry was seen as being on offer sometimes by (40%) of participants in Q14. Overall the availability of rice and curry options achieved a mean score of 2.40 (0.97) and 2.05 (0.86) respectively. Participants also rated the food they received as not having fresh spices added (Q15), with 40% scoring “never” having tasted fresh spices in their food (mean score of 2.35).

Temperature is an important criteria for food preferred by unwell Indians and South Asians. Participants generally received hot temperature food for breakfast, lunch and dinner, with 40-45% “always” receiving hot temperature food during their stay in hospital (Q19). In the interviews, participants confirmed that it is important for them to have hot temperature food when they are not well. This is because they believe that hot or warm food is more comforting, and makes meals more appetizing, enabling them to eat more when in hospital.

“I think that it is common for sick people to have warm food, as it is more comforting than eating cold food, which may be hard for the patients to eat it as it is more solid.”

“I feel like warm food is more comforting especially when you are in the hospital where it is quite cold in here, and I would eat more of them as compared to being served cold meals.”

A majority of participants found the staff were respectful to them, in results for Q20, 70% rated food service staff as being “always” culturally respectful of their needs, and a total mean score of 4.35 (1.06).

More participants scored themselves as experiencing reduced appetite (55%) and taste changes (65%) in Q24, which affected their ability to consume and enjoy food during their stay in hospital. Results for Q24 on conditions influencing ability to consume and enjoy meals are shown in Table 12.

Table 12. Conditions influencing participants’ ability to consume and enjoy meals

Conditions	n	%
Reduced Appetite	11	55
Taste Changes	13	65
Nausea	4	20
Vomiting	3	15
Pain	4	20
Constipation	3	15
Difficulty to swallow	1	5

Results from section 2 of the questionnaire, participants’ expectations of food items available in hospital are presented as percentages, of the sum of the number of items chosen by participants. Figure 4, Figure 5 and Figure 6 present the items participants preferred by food, spices and meat respectively.

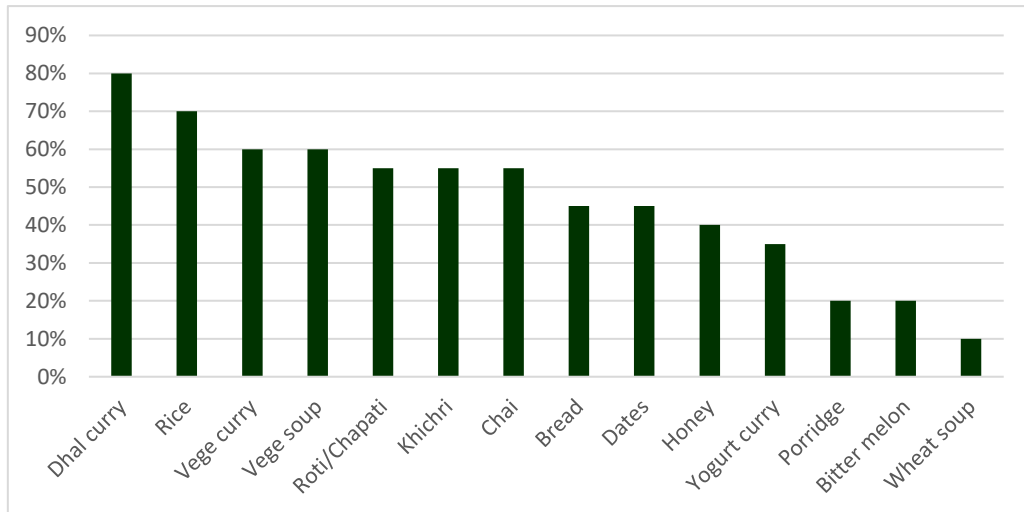


Figure 4 Choices by food item preferred

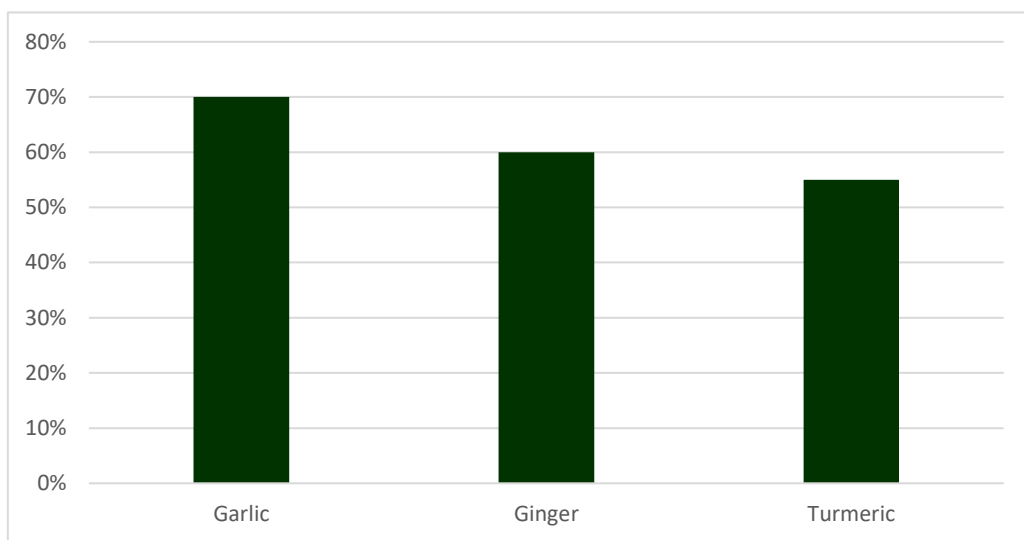


Figure 5. Choices by spices item preferred

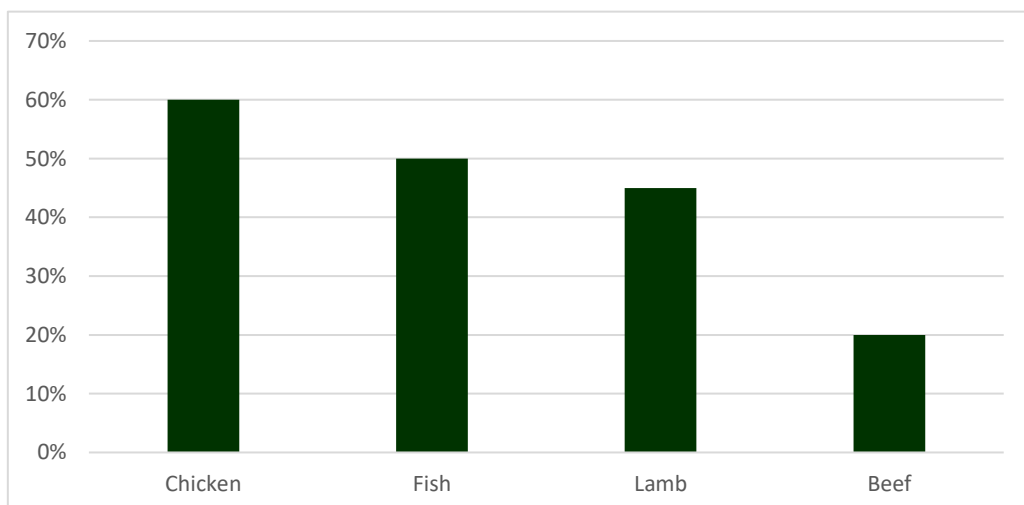


Figure 6. Choices by meat items preferred

Figure 4 shows the distribution of choices in percentage of food items preferred, chosen from options provided in Q20 and additional preferred items. Overall, the dishes preferred by the Indian and South Asian participants were rice, roti/chapatti, curries and soup, and khichri, as these foods were preferred by more than 50% of the participants. From the interviews, rice and dhal curry emerged as the foods participants would most like to be offered during their stay in the hospital.

“For Indian, or South Asian, rice and curries are the common food that we would have every day, so I think having this kind of food served in hospital would make our stay so much better, and our family do not have to bring in food that often.”

While the study hospital did offer rice and chickpea curry on their menu, it was not available every week on the cycle menu. Also, rice and curry were not offered together, and most participants did not favour the combination of foods offered with the curry.

“They do have chickpeas curry in their menu, and I had that. However, the combination of curry and the food served with it was weird to me. The curry was served with potatoes and peas”

From the interviews Khichri emerged as an important food when unwell by many Indian participants. Figure 4 shows that more than 50% of participants would like Khichri to be offered on the menu. The porridge consistency of this dish made it suitable for people who are sick, and prefer softer food.

“Usually people would have khichri when they are not well, especially Indian people. It is like a porridge but a mixture of rice and dhal instead.”

“We would prefer Khichri especially when you are in the hospital, light and soft food is better”

In terms of preferences for spices, 70% of participants wanted to be offered food flavoured with garlic (Figure 5). The spices most preferred by participants were garlic and ginger. Participants believed that garlic and ginger are good to warm up the body, and confer other health benefits.

“Ginger and garlic would add more flavour to the food. They are also good to warm up the body when you are sick.”

Table 13 presents the percentage of each food item preferred by the participants of different religion. All Hindu participants (100%) wanted Masala tea (Chai) to be offered in hospital. Participants were served normal (black) tea, which some of them did not have any complaints about, however, there were some that did not like the tea. They mentioned that the tea served was light and bland, therefore, their family would either bring in more teabags or Masala powder to add to their tea.

Most Muslim participants would like to be offered dates and honey during their stay (70% and 60% respectively). From the interviews it emerged that it is common for Muslim people to have dates and honey whether they are well or unwell. Dates and honey are understood to have many health benefits, and their religion encouraged belief in the benefits of these foods. Participants would have honey on its own, or added in tea or on toast.

“In Islam, dates and honey are very common. Whether you are sick or not, having these foods will give you many health benefits. As it is mentioned in our religion the benefits of them, we do have them whenever we are not feeling well”

“Usually I will have a tablespoon of honey every morning, but we also put it in tea or on toast instead of jam.”

Sikh participants had similar preferences to the Hindus. Both groups do not consume beef, and would like chicken instead. Figure 6 showed that 60% of the total participants preferred chicken, while only 20% preferred beef. As presented in Table 13, only Muslims participants want beef to be offered on the hospital menu. The Muslim group preferences for four types of meat ranged between 40% and 60%. However, it was strongly evident from analysis of interview data that these meats need to be trusted as being Halal.

Table 13. Food item preferences based on religion (%)

Items	Hindu (n=7)		Islam (n=10)		Sikh (n=3)	
	Total (n)	%	Total (n)	%	Total (n)	%
Rice	3	43	8	80	3	100
Roti/Chapati	4	57	5	50	2	67
Bread	3	43	5	50	1	33
Dhal curry	6	86	7	70	3	100
Vege curry	4	57	6	60	2	67
Yogurt curry	4	57	1	10	2	67
Porridge	1	14	2	20	1	33
Khichri	3	43	5	50	3	100
Wheat soup	1	14	0	0	1	33
Vege soup	5	71	5	50	2	67
Masala tea/ Chai	7	100	2	20	2	67
Dates	2	29	7	70	0	0
Honey	2	29	6	60	0	0
Bitter melon	0	0	3	30	1	33
Garlic	6	86	6	60	2	67
Ginger	6	86	4	40	2	67
Turmeric	6	86	3	30	2	67
Chicken	5	71	5	50	2	67
Beef	0	0	4	40	0	0
Lamb	2	29	6	60	1	33
Fish	4	57	5	50	1	33

In relation to food type, participants would prefer food that is boiled (65%), steamed (65%) and hot in temperature (65%) (Table 14). Hindu participants showed high preference (71%) for steamed food, Muslim participants would prefer steamed (70%) and boiled (70%) food, and Sikh participants prefer to have boiled food (100%) when

in hospital. This was reinforced in the results of interview data analysis, including how adding garlic and ginger would improve the taste and quality of these dishes. Preference of hot temperature food was seen across the different religion. All Sikh participants recorded preferring raw food such as salad, during their stay. Participants would prefer steamed and boiled food as this is lighter, and is easy to chew and swallow, especially when in hospital.

Table 14. Responses (%) type of food preferred when unwell by religion

	Total (n=20)	%	Hindu (n=7)	%	Islam (n=10)	%	Sikh (n=3)	%
Fried	2	10	1	14	0	0	1	33
Steamed	13	65	5	71	7	70	1	33
Boiled	13	65	3	43	7	70	3	100
Oily	0	0	0	0	0	0	0	0
Hot	13	65	4	57	7	70	2	67
Cold	0	0	0	0	0	0	0	0
Spicy	4	20	1	14	2	20	1	33
Raw	11	55	2	29	6	60	3	100

6. Discussion

Food is important for patient recovery. In addition to supplying nutrients, food also provides emotional benefits during patients' stay in hospital (74). This thesis demonstrates non-Europeans need for culturally appropriate food in New Zealand hospitals. Providing food that is familiar and acceptable to non-European population groups would demonstrate respect, and is likely to increase patient food consumption and satisfaction (52). The growing need for culturally appropriate foods in NZ public hospitals is driven by the demographic trends (1, 9). However there are very few studies on culturally appropriate foods for unwell Indian and South Asians, nor the food preferences of such patients in New Zealand hospitals. This current study explores the food patterns and food preferences of this population, including food ingredients, preparation, and religious beliefs which play a significant role in their food preferences when in hospital.

6.1 Cultural Food

Culture is a significant factor in personal identity and food has a key symbolic function in establishing and maintaining cultural identity (23). From the literature it is evident that children of immigrants born in a new country, or people who migrated at a young age often adapt their culture and diet to fit the patterns of their host country. Patterns of acculturation were evident in the focus group results, which showed most of the older generation would prefer to have Indian and South Asian cultural foods when in hospital. This preference of first generation migrants may reflect ongoing emotional connection to their culture of origin (23), in which they valued the familiar flavours in the food. The second generation and above had no difficulty in adapting to New Zealand food, or choosing New Zealand or western style food when they are admitted into the hospital. Free living Indian and South Asians have no difficulties sourcing traditional ingredients

for their dishes, as Indian stores and markets are readily accessible in Auckland (75). This reflects globalization of the food supply where products are imported to meet the demand of the growing Indian and South Asian population in New Zealand.

Indians and South Asians are known to have diverse cultural foods, including the various types of spices and ingredients added to enhance the flavour of their dishes (22, 23). However, similarities in common foods across the South Asian ethnicities was observed in all three phases of this study. Rice or roti with curries was found to be a common dish in Indian and South Asian diets. Traditional preferences for different staple carbohydrates, such as North Indians preferring roti or chapatti, South Indians preferring rice (22), and Bangladeshi prefer parboiled rice, applied to participants in this study. Common preferences for curries included vegetable, dhal and meat curries. Unsurprisingly dhal with rice or roti was the hospital menu item most preferred by Indian and South Asian patients. As this is a normal food in their diet, it is considered comforting and these patients would like to eat this familiar food. Of the spices turmeric, chillies, cardamom, ginger, garlic, cumin and coriander are most commonly used in Indian and South Asian cuisines (27), the results highlight a preference for garlic, ginger and turmeric, especially when people are unwell. Preference for these spices, in addition to giving flavour to dishes reflects Indian and South Asian beliefs that they have health benefits especially when sick. Turmeric is known to have anticancer, anti-inflammatory and antioxidants properties (22) while ginger and garlic help in digestion and act as antioxidants (22, 76), also participants believed they warm up the body from flu or cold. For unwell people, use of these three spices needs to be 'light' compared to their normal preparation of food.

Another common dish preferred when unwell is Khichri. This combination of dhal and rice cooked together (39), gives a porridge-like consistency that is preferred by this

patient group as it is soft, easy to chew and digest. In addition this study found that Indian and South Asian people in NZ do not have strong preferences as to type of vegetable, because they are used to having a wide range of vegetables in their home countries and have adapted to vegetables available in NZ (25). Regarding the type of meat most often used in cooking, beef and pork are not typical in Indian and South Asian meals, as cows are sacred in Hindu religion, and pork is forbidden for Muslims (6, 27). This explains the study finding that chicken was the most preferred type of meat on the hospital menu. This study also found that temperature of the food plays a significant role in their food preferences when unwell. Study participants emphasized that hot temperature food would bring them comfort and increase their appetite.

6.2 Religious influences

From the literature, it is clear that religion exerts a strong influence on the food preferences of Indian and South Asian people. Most of the Hindu population adheres to a vegetarian diet, however it depends on the individual which type of vegetarian diet they follow; lacto-vegetarian, ovo-vegetarian, or vegan. Therefore knowing which specific diet habits Hindus practice is key to providing appropriate food choices in hospital. As Hindus are known not to consume any beef products, hospital services also need to consider the ingredients in products on the menu, such as yogurt containing beef gelatine.

Many aspects need to be considered to prepare acceptable Halal options for Muslim patients in hospital. Results of this study found that trust was the main issue regarding the Halal menu provided in hospitals. The term Halal does not just involve food containing pork and alcohol, and meat slaughtered in Islamic way, but the preparation site of the food needs to be in a Halal environment as detailed in section 2.3.1 pg 16 of the literature review. Interestingly many participants mentioned that they trust the Halal

options provided by airline kitchens. This is due to Halal labelling on the food or menu, which builds trust with consumers. Masion et al's study showed that Halal labelling was important for Muslims whose purchasing behaviour is strongly influenced by religion (58). The conference paper by Wong provides a useful checklist of all the items a foodservice needs to consider to follow (strict) Halal protocols, and so earn the confidence and trust of Muslim patients (51). This finding is novel for NZ hospital food services and warrants further investigation into how hospitals can build the trust of the Muslim community in the Halal menu options and portray their institution as being Islamic friendly.

6.3 Hospital food service experiences

The assessment of Indian and South Asians' experience of hospital food and hospital food services showed patients found hospital menus offered limited culturally appropriate options. Consequently the majority of these populations chose the vegetarian option, as it offered foods closest to their preferred choice. However participants experience of the vegetarian menu did not meet their expectations, as the options they received did not vary enough on a day to day basis. This suggests that hospital menus need to focus on including more types of vegetables in their menu, and a greater range of vegetarian dishes. Another important aspect was Indian and South Asian patient's experience of the taste of hospital food with many reporting food tasting bland and needing extra flavour in order to increase their desire for the food. Underpinning this finding is Indians and South Asians' use of garlic and ginger in their cooking due to the health benefits of these ingredients (76). Patients reported that they would prefer these spices to be added into the meals, instead of adding salt and pepper when having the meal.

Overall, participants had low expectations of hospital food services. This is because they were aware that the hospitals are publically-funded, and so expected limited menu options, especially for Indian and South Asian food. As long as acceptable vegetarian options are available, there are no strong preferences regarding the food provided in hospitals. Muslim patients were aware of the non-strict Halal options provided by the hospital. Some participants had no problem choosing these foods, whereas others require strictly Halal food. Most families bring food for relatives in hospital for a range of reasons, including low overall expectations and experience of hospital food, as reported by participants in Phase 2 and 3 of this study.

6.4 Strength and limitations

A major strength of this study was the combination of qualitative and quantitative methods of data collection in sequenced phases to address the aim of this exploratory study. In the absence of a substantial body of literature, Phase 1 on-line survey results helped develop the focus group questions and questionnaire contents. Phase 2 focus groups provided valuable details on the normal eating habits and food preferences when unwell. These details helped in filling the gaps of the information gathered in Phase 1, and further assisted the development of the questionnaire administered in Phase 3. The questionnaire quantitatively evaluated the experience of Indian and South Asian patients, and the linked interview provided detailed understanding about experiences and expectations of hospital food services. Combining these results helped determined the most important food preferences of Indian and South Asian patients. The ethnic background of the student researcher enabled recruitment of participants, collection and interpretation of data that is more detailed and nuanced than a non-Asian, non-Muslim researcher could have produced.

The limitations of online surveys, as discussed in the literature apply to this study, particularly as it was a brief survey. These may include the inability to probe responses and probability of low responses rate (69, 77). The other limitation of this study involved the focus group carried out with the Muslim Indian and South Asian, in which the participants were all males. This was due to the focus group being held after their Jumaah prayer, which is a prayer required for Muslim males, but optional for females (78). However, throughout the discussion, the participants showed great knowledge regarding their food and eating habits.

Due to the inclusion criteria of only surgery patients used for recruitment in Phase 3, the results do not guarantee to represent the preferences of Indian and South Asian patients in New Zealand hospitals. Some participants were either nil-by-mouth for a few meals, or tired and still experiencing side effects from their treatment. Also, their short stay, and limited English language ability were additional limitations. Some close ended questions were needed during the interview to facilitate the participants' responses. Using this approach was necessary to gather as much content as possible over a relatively short recruitment period. The need in Phase 3 to include Muslim Fiji Indians participants may have added subtle differences in food patterns into the results, in spite of their overall similar food preferences and eating habits (79). A more accurate capturing of Indian and South Asian food preferences would have been possible with a longer recruitment period allowing more South Asia participants to be recruited.

Whilst not a major limitation, developing a questionnaire to capture food preferences was a challenge due to the absence of a food preferences survey instrument specific to the Indian and South Asian population living in New Zealand. The study questionnaire was underpinned by the components of food preferences identified by the researcher from the literature review and focus group results. Unlike an established instrument, the

questionnaire was open to some bias as it is not validated, however, the questionnaire is based upon the best evidence to date.

6.5 Implications for future research

The results of this study highlight several areas of research needed to further explore aspects of food preferences of Indian and South Asian hospital populations. As well designed food preference studies involve large data sets to accurately represent a population, future studies should include more hospitals and have broader participant inclusion criteria (80). However, before use in large-scale research, further questionnaire development is required to ensure valid results. Relevant studies in the literature use food frequency questionnaires (FFQ) to investigate food preferences (32, 81), future studies could use FFQs to explore more nuanced aspects of the food preferred by Indian and South Asian population when in NZ hospitals. The findings of others and the results of this study indicate that age influences food preference, especially of older people who migrate to other countries (23). Future studies could also investigate food preferences by age group to develop an understanding of preferences by age and length of time in New Zealand. Further research is urgently required with Muslims into the factors that generate trust in hospital supplied Halal food, preparation and service methods.

6.6 Conclusion

The findings of this study suggest Indian and South Asian patients living in New Zealand prefer familiar cultural food when in hospital. Food preference is a broad concept; the key findings of this study show that when Indian and South Asian adults are unwell in hospital their preferences appear to be determined by religion and cultural food traditions where fresh ingredients, and appropriate temperature and texture is

important. Indian and South Asian are found to have similar preferences for food, namely rice or roti with curry dishes. Therefore, implementing these foods into hospital menus would improve the services provided for this population. Implementing these changes will need to be done one step at a time as there are many factors to be considered. Involving food suppliers, the production kitchen, dietitians, patient groups and hospital food service management in menu design is key to patients receiving an effective food service (52).

7. Application of Research to Dietetic Practice

As New Zealand is an increasingly ethnically and culturally diverse country, providing for the cultural needs of ethnic groups is now an essential aspect of dietetic professional competence impacting on standards of professional behavior and ethical obligations. The NZ Dietitian's scope of practice and competency set out by the New Zealand Dietitian Board requires dietitians to *"be culturally responsive to client values, beliefs, and practices in relation to food, nutrition and health"* and also to *"critique and contribute to the development of New Zealand policies influencing food, nutrition and health systems"* (82). Currently, the DHB Dietitian Leadership group are working to review the adult inpatient menu standards to enhance the culturally appropriate foods available for ethnic groups in New Zealand. Offering food that is most likely to be eaten would help patients meet their nutritional needs, providing the menu choices meet the menu standard nutritional goals for energy, protein and micronutrients.

This study has identified khichri, dhal, and rice as cultural foods preferred by Indian and South Asian people when they are sick or admitted to hospital. A sample recipe (83) and nutrient analysis of Indian and South Asian foods are provided in Appendix F. Dhal curry nutrient analyses as obtained from Energy and Nutrient Composition of Foods Singapore, indicates that 1 serving (174.8g) contains 555.84kJ of energy and 10.49g of protein. There were no recipes provided under this food item, however the description stated that it is prepared without coconut milk, and stewed in chili and spices (84). Basmati rice, which is the common type of rice for the Indian and South Asian people, 100g of rice provide 1455kJ of energy and 8.35g of protein (85). The nutrient analysis provided in Appendix F depends on the ingredients and the way the food are

cooked. This information is required for food service dietitians adding these foods into the national menu standards.

Hospital staff training on cultural and religion practices relating to preparing and delivering food including ingredients and contents of food is important to improve hospital food services. Knowledge of certain ingredients and the reasons why these items are valued is fundamental to food service staff providing better services to the Indian and South Asian patients. In particular knowledge of products containing beef and pork substances such as beef gelatin in yogurt, and pork gelatin in jellies, is important as these ingredients can be easily overlooked. Improving trust in the Halal options requires Dietetic leadership to coordinate a joint approach involving the supplier, kitchen and hospital food service management to develop a better understanding and regulations with FIANZ regarding the preparation and labelling of Halal food.

This research experience has developed my skills in problem solving, and building relationships. Throughout the whole research journey, I have experienced some roadblocks especially during the recruitment phases in which I learnt there are factors such as other people's time and availability that need to be considered in the planning stage in order to achieve the target outcome. This experience has developed my problem solving skills as I learnt to come up with back up plans that still meet the criteria and aim of the study. This is important to my dietetic practice as regardless of the work that I will be doing, unexpected problems will arise, and having confidence in solving problems is crucial. As this research involved the cooperation of previously unknown community leaders, dietitians, patients, and hospital food service management, it has helped build my ability to quickly develop effective relationships with a range of people and improve my communication skills. This will help in my future practice as dietitian

when I will be communicating professionally with people in many different roles and need to come across as a credible health professional.

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9.1 APPENDIX A Ethics and other approvals

A.i University of Otago Minimal Risk Health Research Ethics Decision



HD18/001

Academic Services
Manager, Academic Committees, Mr Gary Witte

16 January 2018

Dr P Field
Department of Human Nutrition
Division of Sciences

Dear Dr Field,

I am writing to you concerning your proposal entitled **"My Food is my Medicine - The culturally determined hospital food preferences study"**, Ethics Committee reference number **HD18/001**.

The above research was submitted and reviewed as a 'Minimal Risk Health Research – Audit and Audit related studies' proposal. The outcome of that consideration was that the Committee was of the view that the study as described is consistent with Rule 11(2) (c) of the Health Information Privacy Code 1994 and was **approved**.

The standard conditions of approval for all human research projects reviewed and approved by the Committee are the following:

Conduct the research project strictly in accordance with the research proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee.

Inform the Human Research Ethics Committee immediately of anything which may warrant review of ethics approval of the research project, including: serious or unexpected adverse effects on participants; unforeseen events that might affect continued ethical acceptability of the project; and a written report about these matters must be submitted to the Academic Committees Office by no later than the next working day after recognition of an adverse occurrence/event. Please note that in cases of adverse events an incident report should also be made to the Health and Safety Office:

<http://www.otago.ac.nz/healthandsafety/index.html>

Advise the Committee in writing as soon as practicable if the research project is discontinued.

Make no change to the project as approved in its entirety by the Committee, including any wording in any document approved as part of the project, without prior written approval of the Committee for any change. If you are applying for an amendment to your approved research, please email your request to the Academic Committees Office:

gary.witte@otago.ac.nz

jo.farronediaz@otago.ac.nz

Approval is for up to three years from the date of this letter. If this project has not been completed within three years from the date of this letter, re-approval or an extension of approval must be requested. If the nature, consent, location, procedures or personnel of your approved application change, please advise me in writing.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Gary Witte".

Mr Gary Witte
Manager, Academic Committees
Tel: 479 8256
Email: gary.witte@otago.ac.nz

c.c. Assoc. Prof. L Houghton Department of Human Nutrition

A.ii University of Otago Human Ethics Committee Category B: Departmental Approval

Copy for your record
Sent to Ethics 3/10/17.

Reporting Sheet for use ONLY for proposals considered at departmental level



Form Updated: May 2017

**UNIVERSITY OF OTAGO HUMAN ETHICS COMMITTEE
APPLICATION FORM: CATEGORY B
(Departmental Approval)**

1. **University of Otago staff member responsible for project:**
Field Penny Dr.
2. **Department/School:**
Department of Human Nutrition, University of Otago
3. **Contact details of staff member responsible (always include your email address):**
Email: *penny.field@otago.ac.nz*
4. **Title of project:**
Patient Cultural Food Preferences of Chinese, South East Asian, Indian and South Asian Adults living in New Zealand
5. **Indicate type of project and names of other investigators and students:**

Staff Research	<input type="checkbox"/>	Names	
Student Research	<input checked="" type="checkbox"/>	Names	Gillian Lum, Huda Shahir
Level of Study (e.g. PhD, Masters, Hons)			Masters of Dietetics
External Research/	<input type="checkbox"/>	Names	
Collaboration			
Institute/Company			

Reporting Sheet for use ONLY for proposals considered at departmental level

An information panel will give an outline of the exploratory study and the link to the survey. Informed consent will be deemed to be obtained when participants click on the link to open the survey: <https://www.surveymonkey.com/r/KGD88X2>
Survey questions are provided below.

9. Disclose and discuss any potential problems and how they will be managed:

The survey is confidential and anonymous. The participants can withdraw from participating in the survey at any time and will not be disadvantaged.

*Applicant's Signature: Penny Field

Name (please print): Penny Field

Date: 2 Oct 2017

*The signatory should be the staff member detailed at Question 1.

ACTION TAKEN



Approved by HOD



Approved by Departmental Ethics Committee



Referred to UO Human Ethics Committee

Signature of **Head of Department: Sheila Skeff

Name of HOD (please print): Sheila Skeff

Date: 3/10/2017

**Where the Head of Department is also the Applicant, then an appropriate senior staff member must sign on behalf of the Department or School.

Departmental approval: *I have read this application and believe it to be valid research and ethically sound. I approve the research design. The research proposed in this application is compatible with the University of Otago policies and I give my approval and consent for the application to be forwarded to the University of Otago Human Ethics Committee (to be reported to the next meeting).*

IMPORTANT NOTE: As soon as this proposal has been considered and approved at departmental level, the completed form, together with copies of any Information Sheet, Consent Form, recruitment advertisement for participants, and survey or questionnaire should be forwarded to the Manager, Academic Committees or the Academic Committees Administrator, Academic Committees, Rooms G22,

A.iii MoH HDEC Ethics Committee

Tuesday, 19 December 2017

Dr Penny Field
Department of Human Nutrition
University of Otago
Penny.field@otago.ac.nz

Dear Dr Field,

Study title:	My Food is my Medicine: The culturally determined hospital food preferences study
--------------	---

Thank you for emailing HDEC a completed scope of review form on 19 December 2017. The Secretariat has assessed the information provided in your form and supporting documents against the Standard Operating Procedures.

Your study will not require submission to HDEC, as on the basis of the information you have submitted, it does not appear to be within the scope of HDEC review. This scope is described in section three of the Standard Operating Procedures for Health and Disability Ethics Committees.

Your study meets the student-led research exemption criteria described below. Your scope of review form described an observational research project for the attainment of a masters degree. Participants are Asian patients who have received food during their stay in hospital. The cultural appropriateness of the food provided will be evaluated and information will be created in a way to be included into the National Menu Standards and to assist with menu development.

For the avoidance of doubt a study conducted wholly or principally for the purposes of an educational qualification requires HDEC review only if it:

- is an intervention study, or
- is not conducted at or below a Master's level.

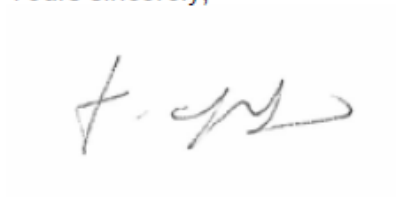
If you consider that our advice on your project being out of scope is incorrect please contact us as soon as possible giving reasons for this.

This letter does not constitute ethical approval or endorsement for the activity described in your application, but may be used as evidence that HDEC review is not required for it.

Please note, your locality may have additional ethical review policies, please check with your locality. If your study involves a DHB, you must contact the DHB's research office before you begin. If your study involves a university or polytechnic, you must contact its institutional ethics committee before you begin.

Please don't hesitate to contact us for further information.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'T. Kent', is centered within a light gray rectangular box.

Tom Kent
Advisor
Health and Disability Ethics Committees
hdec@mh.govt.nz

A.iv University of Otago Maori Consultation

NGĀI TAHU RESEARCH CONSULTATION COMMITTEE Te KOMITI RAKAHAU KI KAI TAHU

Wednesday, 14 February 2018.

Dr Penelope Field,
Department of Human Nutrition - Dietetic Training Programme,
DUNEDIN.

Tēnā Koe Dr Penelope Field,

My Food is my Medicine The culturally determined hospital food preferences study

The Ngāi Tahu Research Consultation Committee (the committee) met on Tuesday, 13 February 2018 to discuss your research proposition.

By way of introduction, this response from The Committee is provided as part of the Memorandum of Understanding between Te Rūnanga o Ngāi Tahu and the University. In the statement of principles of the memorandum it states "Ngāi Tahu acknowledges that the consultation process outline in this policy provides no power of veto by Ngāi Tahu to research undertaken at the University of Otago". As such, this response is not "approval" or "mandate" for the research, rather it is a mandated response from a Ngāi Tahu appointed committee. This process is part of a number of requirements for researchers to undertake and does not cover other issues relating to ethics, including methodology they are separate requirements with other committees, for example the Human Ethics Committee, etc.

Within the context of the Policy for Research Consultation with Māori, the Committee base consultation on that defined by Justice McGechan:

"Consultation does not mean negotiation or agreement. It means: setting out a proposal not fully decided upon; adequately informing a party about relevant information upon which the proposal is based; listening to what the others have to say with an open mind (in that there is room to be persuaded against the proposal); undertaking that task in a genuine and not cosmetic manner. Reaching a decision that may or may not alter the original proposal."

The Committee considers the research to be of interest and importance.

The Committee notes the researchers have identified that while this research may be of great benefit to Māori, they will not be investigating responses from Māori. The Committee believes a great opportunity will be lost and asks if partnerships with Māori liaison groups within the DHBs where the research is to take place might be explored.

The Committee suggests dissemination of the research findings to Māori health organisations regarding this study.

The Ngāi Tahu Research Consultation Committee has membership from:

Te Rūnanga o Ōtākou Incorporated
Kāi Hāirapa Rūnanga ki Puketeraki
Te Rūnanga o Moeraki

NGĀI TAHU RESEARCH CONSULTATION COMMITTEE
TE KOMITI RAKAHAU KI KAI TAHU

We wish you every success in your research and the committee also requests a copy of the research findings.

This letter of suggestion, recommendation and advice is current for an 18 month period from Tuesday, 13 February 2018 to 13 August 2019.

Nāhaku noa, nā



PR NTRC

Mark Brunton
Kaiwhakahaere Rangahau Māori
Research Manager Māori
Research Division
Te Whare Wānanga o Ōtāgo
Ph: +64 3 479 8738
Email: mark.brunton@otago.ac.nz
Web: www.otago.ac.nz

The Ngāi Tahu Research Consultation Committee has membership from:

*Te Rūnanga o Ōtākou Incorporated
Kaiti Huirapa Rānaka ki Puketeraki
Te Rūnanga o Moeraki*

A.v CMDHB Local Authorisation

Required Ethical Approval	Chosen	Ethics Approval Number	Ethics Approval Date
Expedited Health and Disability Ethics Committee ▼	No		
Full Health and Disability Ethics Committee ▼	No		
Institutional Ethics Committee (e.g. University) ▼	Yes		Thursday, February 8, 2018
New Zealand Ethics Committee ▼	No		
No ethical review required ▼	No		
Not Sure ▼	No		

Research / Clinical Audit ID:	602	
Research / Clinical Audit Title:	My Food is My Medicine	
Registration Date:	Thursday, February 8, 2018	
Research/Clinical Audit Start Date:	Friday, February 9, 2018	
Research/Clinical Audit End Date:	Saturday, June 30, 2018	
Lead Investigator:	Stella Welsh (CMDHB)	
Aims / Hypothesis:	To determine and understand Asian (Chinese, South East Asian, Indian and South Asian) adults' food preferences when they are in hospital and their experience of NZ hospital food service to enable Food Services to better meet the food preferences of each ethnic group and thereby nutritional needs.	
Sample Size:	10	
Research Focus:	Indian	
Educational Purpose:	Masters	
Research Summary:	This study will be conducted as two projects. A student researcher one will undertake Project One based in the Waitemata DHB investigating Chinese and South-East Asian adults' food preferences. A second student researcher will undertake Project Two based in Counties Manukau DHB investigating Indian and South Asian adults' food preferences.	
View co-investigators	View type of study	View ethical approvals
View involved departments	View expected outputs	
View resources and facilities	View sources of funding	
View attachments		

List of approvals		
Approver	Approval Date	Approved
Samantha White (CMDHB) ▼	Thursday, February 8, 2018	Y
Ian Dodson (CMDHB) ▼	Friday, February 9, 2018	Y

A.vi Amendment Letter



HD18/001

Academic Services
Manager, Academic Committees, Mr Gary Witte

30 April 2018

Dr P Field
Department of Human Nutrition
Division of Sciences

Dear Dr Field,

I am again writing to you concerning your proposal entitled **"My Food is my Medicine - The culturally determined hospital food preferences study"**, Ethics Committee reference number HD18/001.

Thank you for your email of 25th April 2018 requesting an amendment to the above study.

The Committee notes that there have been unforeseen delays in recruiting participants in to the study and, as such, you now expect to need an additional 4 weeks to collect participant data. You further note that you have been advised to widen the inclusion criteria from 'elective surgery' to 'surgery' to increase the chances of achieving the minimum number of participants needed.

The Committee accepts and approves the amendment and thanks you for providing the revised documentation.

Your proposal continues to be fully approved by the Human Ethics Committee. If the nature, consent, location, procedures or personnel of your approved application change, please advise me in writing. I hope all goes well for you with your upcoming research.

Yours sincerely,

Mr Gary Witte
Manager, Academic Committees
Tel: 479 8258
Email: gary.witte@otago.ac.nz

c.c. Assoc. Prof. L Houghton Department of Human Nutrition

A.vii Study Protocol

“My Food is My Medicine” The culturally determined Hospital Food Preferences Study 2017 - 2018

Research Aim: To determine and understand Asian (Chinese, South East Asian, Indian and South Asian) adults' food preferences when they are in hospital and their experience of NZ hospital food service to enable Food Services to better meet the food preferences of each ethnic group and thereby nutritional needs.

Research Question: What are the culturally determined food preferences of adult Chinese, South East Asian, Indian and South Asian patients in NZ hospitals?

Objectives:

1. To understand and determine culturally appropriate foods for adult Chinese, South-East Asian, Indian, South Asian patients in DHB hospitals.
2. To present this information so that it can be incorporated into the National Menu standards and assist with menu development.

This study will be conducted as two projects. A student researcher one will undertake Project One based in the Waitemata DHB investigating Chinese and South-East Asian adults food preferences. A second student researcher will undertake Project Two based in Counties Manukau DHB investigating Indian and South Asian adults food preferences.

Study Design and Methods

This mixed methods study using focus groups, a questionnaire and qualitative interviews, will be conducted in three phases:

Phase One: September–October 2017

A review of published and grey literature has identified current knowledge on the food habits of Chinese, South East Asian, Indian and South Asian adults living in New Zealand and how these change with ill health. To complement the literature review a small exploratory online questionnaire has been conducted to explore the food preferences of Chinese, South East Asian, Indian, and South Asian students at Otago University.

Phase Two: February – March 2018

Project 1. At least two focus groups will be conducted with 6-10 Chinese, and 6-10 South East Asian (Filipino) English-speaking adults (18 years and above) to identify the food habits of the general adult population when they are well, how these change when they are unwell and expectations of a New Zealand hospital food service. Chinese and Filipino represent large percentages of the Waitemata DHB Asian population.

Recruitment:

Focus group participants will be recruited through Waitemata DHB Community liaison groups and Auckland Community Chinese and Filipino groups and networks. The Project 1 student researcher, with support from four Auckland based Dietitian Project Advisors will communicate with contacts in DHB and Auckland community Chinese and Filipino community groups. Initial communication by the student researcher indicates these groups are willing to assist. Focus Group recruitment material (attached) will be posted on Community

Group websites and included in e-newsletters as appropriate. Student researchers will respond to email enquires myfoodmymed@otago.ac.nz and forward study information including an introductory letter, information sheet, consent form (attached) and details of the focus group meeting (time, date, venue, parking).

A signed consent form will determine whether an individual is included in the study, the absence of a signed form at the commencement of the focus group will exclude individuals from the focus group. Venues for the focus groups will be organised through the community groups, with the University of Otago facility in Queen St Auckland as a back-up location.

Data collection:

Focus group data will be collected using both audio and written recordings. Both student researchers will attend all focus groups. The project lead student researcher will facilitate her focus groups supported by the other student researcher.

Focus group schedule is attached.

Analysis:

Qualitative analysis of focus group transcripts will identify major themes relating to culturally determined food habits and information on food preferences, as well as the expectations for hospital food of Chinese and Filipino adults living in Auckland.

Project 2. At least two focus groups will be conducted with 6-10 Hindu Indian and South Asian, and 6-10 Muslim Indian and South Asian English-speaking adults (18 years and above) to identify the food habits of the general adult population when they are well, how these change when they are unwell and their expectations of a New Zealand hospital food service. Indian constitutes the largest percentage of the Counties Manukau DHB Asian population, however following Hindu or Islam religion has a far more profound influence on their food patterns.

Recruitment:

Participants will be recruited through Counties Manukau DHB Community liaison groups and Auckland Community groups and networks. The Project 2 student researcher, with support from four Auckland based Dietitian Project Advisors will communicate with contacts in Auckland community Hindu and Muslim community groups. Initial communication by the student researcher indicates these groups are willing to assist. Focus Group recruitment material (attached) will be posted on Community Group websites and included in e-newsletters as appropriate. Student researchers will respond to email enquires @myfoodmymed.otago.ac.nz and forward study information including an introductory letter, information sheet, consent form (attached) and details of the focus group meeting (time, date, venue, parking).

A signed consent form will determine whether an individual is included in the study, the absence of a signed form at the commencement of the focus group will exclude individuals from the focus group. Venues for the focus groups will be organised through the community groups, with the University of Otago facility in Queen St Auckland as a back-up location.

Data collection:

Focus group data will be collected using both audio and written recordings. Both student researchers will attend all focus groups. The project lead student researcher will facilitate her focus groups supported by the other student researcher.

Focus group schedule is attached.

Analysis:

Qualitative analysis of the focus group transcripts will identify major themes relating to culturally determined food habits and information on food preferences, as well as the expectations for hospital food of Hindu and Muslim Indian and South Asian adults living in Auckland.

Phase Three: March – April 2018

Patient questionnaires and interviews. Food preferences identified in the focus groups will inform the development of four written questionnaires (approximately 20 item) and four interview schedules to separately investigate Chinese, South East Asian, Indian and South Asian adult's experience of hospital food service. Pilot testing with DHB staff members of the cultural group under investigation will be used to establish face validity of the questionnaires.

Participant inclusion criteria: adults 18 years of age and above, English speaking, booked for surgery at North Shore Hospital or Middlemore Hospital between Monday April 30 2018 and Friday May 25 2018. Each participant will be assigned a unique identifier code. Minimal non-identifying demographic information will be sought: self-reported age range, ethnicity, gender, and the length of hospital stay.

Project 1. Waitemata DHB staff will identify adult patients admitted for surgery requiring at least two over-night stay between Monday April 30 and Friday May 25. A DHB Dietitian will approach identified patients to explain the study and seek their consent to complete a pre discharge experience questionnaire and undertake a short qualitative interview with the student researcher.

At least 10 participants of each ethnicity, Chinese and South-East Asian, need to be recruited to allow for relatively stable estimates of the standard deviation and for comparison between ethnicities.

Project 2. Counties Manukau DHB staff will identify adult Hindu Indian and South Asian, and Muslim Indian and South Asian patients admitted for surgery requiring at least two over-night stay between Monday April 30 and May 25. A DHB Dietitian will approach identified patients to explain the study and seek their consent to complete a pre discharge experience questionnaire and undertake a short qualitative interview with the student researcher.

At least 10 participants of each ethnicity, Hindu Indian and South Asian, and Muslim Indian and South Asian need to be recruited to allow for relatively stable estimates of the standard deviation and for comparison between ethnicities.

Recruitment:

A Dietitian in each hospital will record identified patient's names and ward contact details against an individual code identifier. The Dietitian will explain the study to identified patients on the ward and offer interested patients study information packs including: introductory letter, information sheet, and consent form. Upon receipt of a signed consent form the Dietitian will pass patient name

and ward details to the relevant student researcher. Student researchers will be aware of patient's identity and preserve their anonymity by using the unique code identifier on all records.

On the day of expected discharge, student researchers will approach consenting patients on the ward to confirm their understanding of the study and willingness to participate. When this confirmation is received the student researcher will give the written questionnaire to the participant and return approx. 20mins later to collect the completed questionnaire. The student researcher will then undertake the brief interview with participants.

Additional eligible patients may be approached by the hospital Dietitian using the above procedures to ensure at least 10 participants of each ethnic group are included. The questionnaire and interview will not require any information on individuals' clinical condition(s) nor any personal information apart from ethnicity, age range and length of current hospital admission.

Participants will be offered a supermarket voucher to the value of \$20 for completing both the written questionnaire and brief interview, these will need to be signed for at the conclusion of the interview.

Data collection:

On the day of discharge, the student researchers will collect the completed written questionnaire and undertaken the brief 15 minutes interview to clarify and explore reasons for participants responses in the questionnaire. Interview questions will be derived from the questionnaire. The interview will be audio recorded, and some notes may be taken during the interview.

Analysis:

Quantitative analysis: the questionnaire results will report participants experiences of the hospital food service in hospital and identify food service factors that are important to patients of each ethnic group.

Qualitative analysis: The student researcher will undertake selective inductive transcription of interview data. Through an iterative process explanatory themes will be extracted that offer explanations for responses given on the experience questionnaire and offer further insights into participants culturally -determined food preferences.

Combined analysis: Analysis of combined qualitative and quantitative data will identify the food and food service needs of Chinese, South East Asian, Indian and South Asian adult patients to inform the development of DHB national menu standards for these population groups.

9.2 APPENDIX B Online Survey (Phase 1)

B.i Online Survey

Food Preferences among the Asian Population Residing in New Zealand

Masters of Dietetics, Department of Human Nutrition, University of Otago

This survey is part of our Masters of Dietetics thesis, which aims to understand and determine culturally appropriate foods for adult Chinese, Indian, South-East Asian and South Asian patients in DHB hospitals. This survey is administered to investigate the food preferences of the Asian population residing in New Zealand and if it differs when this population is unwell. The data collected from this survey will help develop a questionnaire, which will be administered to the Asian population residing in Auckland.

OK

1. What is your ethnicity? (Please select all that apply.)

- ☐ Chinese
- ☐ Malay
- ☐ Indian
- ☐ Vietnamese
- ☐ Indonesian
- ☐ Thai
- ☐ Taiwanese
- ☐ Sri Lankan
- ☐ Pakistani
- ☐ Bangladeshi
- ☐ Cambodian
- ☐ Other (please specify)

2. What is your country of birth?

- ☐ New Zealand
- ☐ China
- ☐ Thailand
- ☐ Vietnam
- ☐ Malaysia
- ☐ Singapore
- ☐ Indonesia
- ☐ Philippines
- ☐ India
- ☐ Sri Lanka
- ☐ Pakistan
- ☐ Bangladesh
- ☐ Nepal
- ☐ Bhutan
- ☐ Maldives
- ☐ Other (please specify)


3. Do you identify with any of the following religions? (Please select all that apply.) 

- | | |
|---|--------------------------------------|
| <input type="checkbox"/> Protestantism | <input type="checkbox"/> Buddhism |
| <input type="checkbox"/> Catholicism | <input type="checkbox"/> Hinduism |
| <input type="checkbox"/> Christianity | <input type="checkbox"/> Sikhism |
| <input type="checkbox"/> Judaism | <input type="checkbox"/> Taoism |
| <input type="checkbox"/> Islam | <input type="checkbox"/> No religion |
| <input type="checkbox"/> Other (please specify) | |

4. How long have you been residing in New Zealand?



- | | |
|------------------------------------|--|
| <input type="radio"/> Below 1 year | <input type="radio"/> More than 10 years |
| <input type="radio"/> 1 -3 years | <input type="radio"/> Non-applicable (born in New Zealand) |
| <input type="radio"/> 3 - 9 years | |

5. Which of the following choices do you most commonly eat? (Select those that apply to you) 

- | | |
|---|---|
| <input type="checkbox"/> Western cuisine | <input type="checkbox"/> Malay cuisine |
| <input type="checkbox"/> Indian cuisine | <input type="checkbox"/> Filipino cuisine |
| <input type="checkbox"/> Sri Lankan cuisine | <input type="checkbox"/> Thai cuisine |
| <input checked="" type="checkbox"/> Chinese cuisine | <input type="checkbox"/> Vietnamese cuisine |

Other (Eg: Bangladeshi cuisine, Javanese cuisine etc)


6. Do your food choices differ when you are unwell? (Eg: having a cold) 

- ☐ Yes
- ☐ No

7. If yes, what would you have? (Select those that apply to you)

- ☐ Chinese cuisine
- ☐ Indian cuisine
- ☐ Western cuisine
- ☐ Malay cuisine
- ☒ Sri Lankan cuisine
- ☐ Filipino cuisine
- ☒ Vietnamese cuisine
- ☐ Thai cuisine
- ☐ Non applicable

Other (please specify)

8. When you are unwell, what are the most important foods to have? (Please list at least 3 food items) 

9.3 APPENDIX C Focus Group (Phase 2)

C.i Participant Introductory Letter



My Food is My Medicine: The Culturally Determined Hospital Food Study

Dear

Thank you for taking the time to read the enclosed information and considering taking part in our study to learn about food preferences of Indian and South Asian people when admitted into a hospital. You are receiving this letter as you have expressed interest in the study and meet the criteria for taking part in a group discussion.

Information about the food Indian and South Asian people prefer to eat when in the hospital is limited. At the moment, food services in New Zealand hospitals do not have enough information to include appropriate foods for Indian and South Asian people on the menu. As we know, food is very important for recovery from surgery and illnesses. Serving appropriate foods will help Indian and South Asian to recover more quickly, reduce risk of malnutrition and decrease the length of their hospital stay.

The focus groups we are inviting you to attend will give us and hospital dietitian essential information about the food of Indian and South Asian people prefer to eat when in hospital and can benefit future generations of patients.

The students undertaking this research project, Huda Shahir and Gillian Lum, are in their fifth and final year of study at the University of Otago, completing their Masters of Dietetics degree.

Please read the attached information sheet carefully. Take time to consider and, if you wish, talk with relatives or friends, before deciding whether or not you will take part. If you decide to come to the focus group, we thank you. If you decide not to take part, there will be no disadvantage to you and we thank you for considering our request. If you do decide to attend the focus group, we would appreciate if you email us at myfoodmymed@otago.ac.nz to confirm your attendance and further information (time, date, venue) will be sent to you. You can also email us if you have any further enquires.

Yours sincerely,

Huda Shahir and Gillian Lum

Student Dietitians, University of Otago, Masters of Dietetics



My Food is My Medicine: The Culturally Determined Hospital Food Preferences Study

INFORMATION SHEET FOR PARTICIPANTS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to take part. If you decide to participate we thank you. If you decide not to take part there will be no disadvantage to you and we thank you for considering our request.

What is the Aim of the Project?

We want to learn about food Indian and South Asian adults prefer to eat when they are in hospital in New Zealand. Dietitians in New Zealand public hospitals need this information to change the hospital menus and way food is served to better meet the food preferences of Indian and South Asian people and their nutritional needs.

The aim of the discussion is to learn about the food habits of the general Indian and South Asian adult population and the foods they prefer when they are well and how it changes when they are unwell. We also want to learn about the foods they expect the hospitals to provide and their experiences or their relatives' experiences (if any) of meals during their stay at New Zealand public hospitals.

This project is being undertaken as part of the requirements for Huda Shahir's Masters of Dietetics.

What Types of Participants are being sought?

We are seeking people of Hindu Indian and South Asian, and Muslim Indian and South Asian ethnicity. Participants must be over 18 years of age, English speakers and living in Auckland.

What will Participants be asked to do?

Should you agree to take part in this project, you will be asked to attend a group discussion of 6 to 10 people whose ethnic background is the same or similar to yours. At the group discussion, two student dietitian researchers will ask questions about what you usually eat and what you prefer to eat when you are in hospital for a few days.

To participate in this group discussion, you will need to hand in the enclosed consent form before the discussion starts.

You will be asked several questions on your eating habits when you are well and unwell, and your expectations on New Zealand's hospital food services.

The group discussion will take approximately one hour. Food and drinks will be provided. The group discussion will be audio recorded to allow us to accurately capture all the comments. The results and analysis of the recording will not identify individuals by name, you will remain anonymous. During the group discussion, you may decline to answer any question(s) if you feel hesitant or uncomfortable.

Please be aware that you may decide not to take part in the project without any disadvantage to yourself.

What Data or Information will be collected and what use will be made of it?

We will be asking questions about what you usually eat and what you prefer to eat when you are in hospital. We will also ask your age range, gender, ethnicity, length of stay in New Zealand, whether you have previously spent time in a hospital.

Audio recording will be used for the analysis of the focus groups. The transcripts of the focus group will not reveal the identity of the participants. Only the student researcher, Huda Shahir and Dr Penny Field, will have access to personal information and even then, only the study numbers will identify individuals.

No information that will identify you as an individual will be collected for the study. Data will be extracted from the audio recordings of the focus groups; no copies will be made and the recordings will be erased from the student researcher's computer at the conclusion of the study in July 2018. The transcripts of the focus groups will not reveal the identities of the participants. The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve your anonymity.

Can Participants change their mind and withdraw from the project?

You may withdraw from participation in the project at any time and without any disadvantage to yourself.

What if Participants have any Questions?

If you have any questions about our project, either now or in the future, please feel free to contact either:-

Huda Shahir or *Dr Penny Field*

Department of Human Nutrition

University Telephone Number: 03 479 7956

Email Address: myfoodmymed@otago.ac.nz

penny.field@otago.ac.nz

Department of Human Nutrition

Email Address:

This study has been approved by the Department stated above. However, if you have any concerns about the ethical conduct of the research you may contact the University of Otago Human Ethics Committee through the Human Ethics Committee Administrator (ph +643 479 8256 or email gary.witte@otago.ac.nz). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

C.iii Consent form



10. My Food is My Medicine: The Culturally Determined Hospital Food Preferences Study.

Principal Investigator: Dr Penny Field, penny.field@otago.ac.nz, tele 03 4797956

11. CONSENT FORM FOR PARTICIPANTS

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:-

1. I have read the Information Sheet concerning this study and understand the aims of this research project.
2. I have had sufficient time to talk with other people of my choice about participating in the study.
3. I confirm that I meet the criteria for participation which are explained in the Information Sheet.
4. All my questions about the project have been answered to my satisfaction, and I understand that I am free to request further information at any stage.
5. I know that my participation in the project is entirely voluntary, and that I am free to withdraw from the project at any time without disadvantage.
6. I know that when the project is completed all personal identifying information will be removed from the paper records and electronic files which represent the data from the project, and that these will be placed in secure storage and kept for at least ten years.
7. I understand that the results of the project may be published and be available in the University of Otago Library, but that I agree that any personal identifying information will remain confidential between myself and the researchers during the study, and will not appear in any spoken or written report of the study
8. I know that there is no remuneration offered for this study, and that no commercial use will be made of the data.

I agree to take part in this project.

.....
(Signature of participant)

.....
(Date)

.....
(Printed Name)



My Food is My Medicine: The Culturally Determined Hospital Food Preferences Study

We would like to know more about you!

For each question, tick or write in the space provided the option that best applies to you.
Please answer every question. Thank you.

Age Range

- | | |
|-----------------------------------|--|
| <input type="radio"/> 0-19 years | <input type="radio"/> 60-69 years |
| <input type="radio"/> 20-29 years | <input type="radio"/> 70-79 years |
| <input type="radio"/> 30-39 years | <input type="radio"/> 80-89 years |
| <input type="radio"/> 40-49 years | <input type="radio"/> 90-99 years |
| <input type="radio"/> 50-59 years | <input type="radio"/> 100 years and over |

Gender

- | | |
|----------------------------|------------------------------|
| <input type="radio"/> Male | <input type="radio"/> Female |
|----------------------------|------------------------------|

What ethnic group do you belong to? Please mark all spaces that applies to you.

- ☐ Indian
- ☐ Pakistani
- ☐ European
- ☐ Other

Specify your ethnicity:

Where were you born?

Specify your country of birth:

How many years have you lived in New Zealand?

- | | |
|--|--|
| <input type="radio"/> Less than 10 years | <input type="radio"/> More than 40 years |
| <input type="radio"/> 10-40 years | <input type="radio"/> All my life, I was born here |

C.iv Focus group schedule

Original questions	Additional/Adaptation from pilot test	Probe questions
1. What do you normally have for your first meal in New Zealand?	Thinking about your current diet in New Zealand, can you describe to me what do you normally have for your first meal of the day?	Time of the day Cooking methods Type of ingredients
2. What do you normally have for your second meal in New Zealand?	Can you describe to me what would you have for your second meal of the day?	Time of the day Cooking methods Type of ingredients
3. What do you normally have for your third meal in New Zealand?	Can you describe to me what you would normally have for your third meal of the day?	Time of the day Cooking methods Type of ingredients
4. Which are these are your main meal?	Among those three meals, which one would you consider as your main meal?	Why is that?
5. What do you normally have as snacks?		Type of snacks Why having those snacks? Any traditional snacks?
6. What are the difficulties in preparing your favourite foods in New Zealand?		For example, availability of products, time preparation and cost of products
7. When you are unwell, are there any differences in your meal patterns?	Do your preferences of food change when you are unwell, comparing to your normal meal patterns?	Why is that?
8. What kind of foods are important to you when you are sick?		Type of food/ingredients Cooking methods Why are they important? Any type of food you considered as healing food? What is considered as your comfort food? Are these important when you are sick?

9. What cultural traditions influences the food when you are unwell?	Among all the food mentioned being preferred when unwell, were they influenced by your culture and religion?	How is that? Can you explain more?
10. Have you/any of your family members been admitted to the hospital?	**For Muslim group, do you have any opinions regarding the Halal option provided in hospitals?	Can you share the experience? Any concerns during the stay regarding the food provided? What about the menu option available in hospital?
11. What food do you expect the hospital to provide?		Type of food/ingredients Cooking methods Why those food? What about the services, such as presentation of the food, and cutlery?
12. What else would you like to see in NZ hospital food service?	That's all the questions I have, do you have anything else you would like to share, or some final thoughts?	

9.4 APPENDIX D Questionnaire and Interview (Phase 3)

D.i Study Information Pack

“My Food is My Medicine”

The Culturally Determined Hospital Food Preferences Study



Dear

Thank you for taking the time to read the enclosed information and considering in taking part in our study to learn about food preferences of Hindu Indian and South Asian and Muslim Indian and South Asian when they are admitted to hospital. You are receiving this letter as you have expressed interest and meet the criteria for taking part in this study.

Information about food Hindu Indian and South Asian and Muslim Indian and South Asian people prefer to eat when in hospital is limited. At the moment, New Zealand hospital food service do not have the enough information to include appropriate foods for Hindu Indian and South Asian and Muslim Indian and South Asian people on the menu. As we know, food is very important for recovery from surgery and illness. Serving appropriate foods will help Hindu Indian and South Asian and Muslim Indian and South Asian to recover quickly, reduce risk of malnutrition and decrease length of hospital stay.

The questionnaire and interview we are inviting you to complete will give us and Hospital Dietitians essential information about the food Hindu Indian and South Asian and Muslim Indian and South Asian people prefer to eat when in hospital, and feedback from your experience of the food and service you receive during your stay at Middlemore Hospital. These information can benefit future generations of patients and help in adapting cultural food into hospital menu to provide good food service to this ethnic group.

The students undertaking this research project, Huda Shahir and Gillian Lum, are in their fifth and final year of study at the University of Otago, completing their Masters of Dietetics degree.

Please read the attached information sheet carefully. Take time to consider and, if you wish, talk with relatives or friends, before deciding whether or not you will take part. If you decide to, we thank you. If you decide not to take part, there will be no disadvantage to you and we thank you for considering our request. For your efforts, upon completion of the study you will receive a \$20 supermarket voucher. If you do decide to take part, we would appreciate if you can sign and return the consent form (attached) to the Hospital Dietitian in-charged. The student researcher will only approach you once you have given consent. You can contact the student researchers at myfoodmymed@otago.ac.nz for more information.

Yours sincerely,

Huda Shahir

Student Dietitians, University of Otago, Masters of Dietetics



My Food is My Medicine: The Culturally Determined Hospital Food Preferences Study

INFORMATION SHEET FOR PARTICIPANTS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to take part we thank you. If you decide not to take part there will be no disadvantage to you and we thank you for considering our request.

What is the Aim of the Project?

We want to learn about the food preferences of Indian and South Asian adults, who are practicing Hinduism and Islam, when they are in New Zealand public hospitals in order to improve hospital food service systems. Dietitians in public hospitals are in need of this information to change the hospital menu and services provided to Hindu Indian and South Asian, and Muslim Indian and South Asian to better meet their food preferences and so their nutritional needs.

It is a quality improvement project, therefore it aims to investigate Hindu Indian and South Asian, and Muslim Indian and South Asian patient's experience of hospital food services and identify the food that are preferred to be adapted in the New Zealand menu standard for hospital food service.

This project is being undertaken as part of the requirements for Huda Shahir's Masters of Dietetics and supervised by Dr Penny Field.

What Types of Participants are being sought?

We are seeking a random sample of people of Hindu Indian and South Asian, and Muslim Indian and South Asian ethnicity who are booked for surgery requiring at least two over-night stay in Middlemore Hospital between Monday April 30 2018 and Friday May 25 2018. Participants must be over 18 years of age and English speakers. We are looking for at least 10 participants of each group.

What will Participants be asked to do?

Should you agree to take part in this project, you will be asked to complete a written questionnaire (approximately 20 items) and a brief 15 minutes interview before being discharged from Middlemore Hospital. The questionnaire and interview will mainly ask about your experience of the Middlemore Hospital food service. To take part in this study, you will need to sign and return an enclosed consent form before you complete the questionnaire.

On the day of discharge, you will receive a copy of a study information pack and will be asked for consent from the hospital Dietitian. The consenting patients will be approached by student researcher, and you will be asked to complete the written questionnaire for approximately 20 minutes. They will return to collect the questionnaire and then you will undertake an interview with the student researcher. This will take approximately 15 minutes.

You will be asked several questions on your eating experience in Middlemore Hospital and some cultural and non-cultural reasons behind your preferences. The interview will be audio recorded and some notes may be taken to allow accurate capture of all comments. The results and analysis of the questionnaire and interview recording will remain anonymous. During both questionnaire and interview, you may decline to answer any particular question(s) if you feel hesitant or uncomfortable.

Please be aware that you may decide not to take part in the project without any disadvantage to yourself.

What Data or Information will be collected and what use will be made of it?

We will be collecting information regarding your age, gender, ethnicity, the length of your hospital stay, and eating experience in Middlemore Hospital. The purpose of collecting this information is to help in gathering more information for the development of food service menu standards in New Zealand Hospitals for Asian ethnicities in New Zealand.

Written and audio recording will be used for the analysis of the focus groups. The transcripts of the questionnaire and interview will not reveal the identity of the participants. Upon participating in this study, you will be randomly located a study number which will be used for all the data we collect. Only the student researchers, Huda Shahir and Gillian Lum, and Dr Penny Field, will have access to personal information and even then, only the study numbers will identify individuals.

No information that will identify you as an individual will be collected for the study. Anonymous data will be extracted from the written questionnaire forms, audio recordings and notes of the interview; no copies will be made and the recordings will be erased from the student researcher's computer at the conclusion of the study in July 2018. The transcripts of the questionnaire and interview will not reveal the identities of the participants. The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve your anonymity.

Can Participants change their mind and withdraw from the project?

You may withdraw from this project at any time and without any disadvantage to yourself.

What if Participants have any Questions?

If you have any questions about our project, either now or in the future, please feel free to contact either:-

Huda Shahir and *Penny Field*

Department of Human Nutrition

Department of Human Nutrition

University Telephone Number: 03 479 7956

Email Address: mohhu782@student.otago.ac.nz

Email Address:

penny.field@otago.ac.nz

[Home contact details of student researchers should not be included unless a special case has been made.]

This study has been approved by the Department stated above. However, if you have any concerns about the ethical conduct of the research you may contact the University of Otago Human Ethics Committee through the Human Ethics Committee Administrator (ph +643 479 8256 or email gary.witte@otago.ac.nz). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.



My Food is My Medicine: The Culturally Determined Hospital Food Preferences Study.

Principal Investigator: Dr Penny Field, penny.field@otago.ac.nz, tele 03 4797956

CONSENT FORM FOR PARTICIPANTS

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:-

1. I have read the Information Sheet concerning this study and understand the aims of this research project.
2. I have had sufficient time to talk with other people of my choice about participating in the study.
3. I confirm that I meet the criteria for participation which are explained in the Information Sheet.
4. All my questions about the project have been answered to my satisfaction, and I understand that I am free to request further information at any stage.
5. I know that my participation in the project is entirely voluntary, and that I am free to withdraw from the project at any time without disadvantage.
6. I know that when the project is completed all personal identifying information will be removed from the paper records and electronic files which represent the data from the project, and that these will be placed in secure storage and kept for at least ten years.
7. I understand that the results of the project may be published and be available in the University of Otago Library, but that I agree that any personal identifying information will remain confidential between myself and the researchers during the study, and will not appear in any spoken or written report of the study
8. I know that there is no remuneration offered for this study, and that no commercial use will be made of the data.

I agree to take part in this project.

.....
(Signature of participant)

.....
(Date)

.....
(Printed Name)

D.ii Questionnaire

ID: _____



Hospital Food Experience Questionnaire

Welcome and thank you for being part of My Food My Medicine Study.
This questionnaire should take approximately 30 minutes to complete.
Please answer every question - there are no right or wrong answers.
Thank you for your time.

Section 1: Your Experience of the Hospital Food and Hospital Food Service

Please think back to meals and drinks you received during your current hospital stay. For each question tick the option that best applies to you or write in the space provided. Please answer every question.

1. Overall, the food I received during my stay in hospital was similar to what I usually have at home.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

2. In hospital, the flavour of the food I received was similar to what I usually eat at home.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

3. During my stay in hospital, I needed food brought in by my relatives.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

4. Each day the hospital menu offered me enough options for each meal to allow me to choose food I preferred for;

a. Breakfast

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

b. Lunch

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

c. Dinner

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

5. I could choose Indian and South Asian foods from the menu for;

a. Breakfast

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

b. Lunch

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

c. Dinner

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

6. Every day, the hospital menu had variety of Halal options that I could choose from.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

7. During my stay in hospital, Halal meat option was offered on every lunch and dinner menu.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

8. When I chose the vegetarian option, the taste was acceptable.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

9. When I chose the non-vegetarian option, the taste was acceptable.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

10. I enjoyed the way the vegetables were cooked.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

11. I enjoyed the way the meats and poultry were cooked.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

12. I enjoyed the way the fish was cooked.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

13. I was served rice as often as I wanted it.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

14. I was able to choose a curry option from the menu if I wanted it.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

15. Fresh spices were used in the food I received.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

16. Fresh fruit was available with each meal if I wanted it.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

17. During my stay in hospital, I enjoyed the type of soups I received for:

a. Breakfast

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

b. Lunch

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

c. Dinner

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always ☐ Not Applicable

18. I was offered Indian Masala tea.

☐ Never ☐ Rarely ☐ Sometimes ☐ Mostly ☐ Always

19. In hospital, hot foods were served hot for:

a. Breakfast

☐ Never

☐ Rarely

☐ Sometimes

☐ Mostly

☐ Always

b. Lunch

☐ Never

☐ Rarely

☐ Sometimes

☐ Mostly

☐ Always

c. Dinner

☐ Never

☐ Rarely

☐ Sometimes

☐ Mostly

☐ Always

20. Compared to the time that I would usually have my meals at home, the timing of my meals in hospital was:

a. Breakfast

☐ Much Earlier

☐ Earlier

☐ Similar

☐ Later

☐ Much later

b. Lunch

☐ Much Earlier

☐ Earlier

☐ Similar

☐ Later

☐ Much later

c. Dinner

☐ Much Earlier

☐ Earlier

☐ Similar

☐ Later

☐ Much later

21. In hospital, the cutlery available to eat my meals was similar to the cutlery I use at home.

☐ Never

☐ Rarely

☐ Sometimes

☐ Mostly

☐ Always

22. During my stay in hospital, the foodservice staff were culturally respectful

☐ Never

☐ Rarely

☐ Sometimes

☐ Mostly

☐ Always

23. Compared to when I am home, I ate the same amount of food during my stay in hospital.

☐ Never

☐ Rarely

☐ Sometimes

☐ Mostly

☐ Always

24. During my stay in hospital, I experienced the following conditions which affected my ability to consume and enjoy my hospitals meals (tick all those that apply to you).

- | | |
|---|--|
| <input type="checkbox"/> Reduced appetite | <input type="checkbox"/> Constipation |
| <input type="checkbox"/> Taste changes | <input type="checkbox"/> Difficulty to swallow |
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Others, please specify: |
| <input type="checkbox"/> Vomiting | |
| <input type="checkbox"/> Pain | |

Section 2. Your Expectation on the Hospital Food and Hospital Food Service

To answer these questions, please consider your expectations of hospital meals, your preferences, and the food that you could eat to help your condition. For each question, please tick the all the options that apply to you. Please answer all questions.

25. I would like to be offered the following food items.

- | | |
|---|---|
| <input type="checkbox"/> Rice | <input type="checkbox"/> Dates |
| <input type="checkbox"/> Roti/Chapati | <input type="checkbox"/> Honey |
| <input type="checkbox"/> Bread | <input type="checkbox"/> Bitter melon |
| <input type="checkbox"/> Dhal curry | <input type="checkbox"/> Garlic |
| <input type="checkbox"/> Vegetable curry | <input type="checkbox"/> Ginger |
| <input type="checkbox"/> Yogurt curry | <input type="checkbox"/> Turmeric |
| <input type="checkbox"/> Rava/Poha porridge | <input type="checkbox"/> Chicken |
| <input type="checkbox"/> Khichri | <input type="checkbox"/> Beef |
| <input type="checkbox"/> Wheat flour soup | <input type="checkbox"/> Lamb |
| <input type="checkbox"/> Vegetable soup | <input type="checkbox"/> Fish |
| <input type="checkbox"/> Indian Masala tea/Chai | <input type="checkbox"/> Other foods, please specify: |

26. When I am unwell in hospital, I prefer food that is: (tick all those that apply to you)

- | | |
|--|---|
| <input type="checkbox"/> Fried | <input type="checkbox"/> Cold temperature |
| <input type="checkbox"/> Steamed | <input type="checkbox"/> Spicy |
| <input type="checkbox"/> Boiled | <input type="checkbox"/> Raw e.g Salad |
| <input type="checkbox"/> Oily | <input type="checkbox"/> Other foods |
| <input type="checkbox"/> Hot temperature | Please specify: |

Section 3. Information about you and your hospital visits. For each question tick the option that best applies to you or write in the space provided. Please answer every questions.

27. Gender

- ☐ Male
- ☐ Female

28. Age in years

- | | |
|--------------------------------------|---|
| <input type="checkbox"/> 0-19 years | <input type="checkbox"/> 60-69 years |
| <input type="checkbox"/> 20-29 years | <input type="checkbox"/> 70-79 years |
| <input type="checkbox"/> 30-39 years | <input type="checkbox"/> 80-89 years |
| <input type="checkbox"/> 40-49 years | <input type="checkbox"/> 90-99 years |
| <input type="checkbox"/> 50-59 years | <input type="checkbox"/> 100 years and over |

29. What is your religion?

- ☐ Hinduism
- ☐ Islam
- ☐ Other

Please specify:

30. What ethnic group do you belong to?

- ☐ Indian
- ☐ Pakistani
- ☐ Sri Lankan
- ☐ Other

Please specify:

31. Where were you born?

Specify your country of birth:

32. How many years have you lived in New Zealand.

- ☐ Less than 10 years
- ☐ 10 – 40 years
- ☐ More than 40 years
- ☐ All my life, I was born here

33. How many nights have you spent in Hospital during this admission?

- ☐ 1 night
- ☐ 2-3 nights
- ☐ 4-5 nights
- ☐ 6+ nights

Thank you for completing the survey 😊

The student researcher will return to collect the completed questionnaire and conduct a brief interview with you. If you have any questions or concerns about this project, either now or in the future, please feel free to email myfoodmymed@otago.ac.nz.

D.iii Interview Schedule

Interview Schedule	Probe questions
During your stay in hospital, were there foods you could choose from on the menu that are the kinds of foods you would have at home when you are unwell?	If yes, how do you find it?
During your stay in hospital, are there any food you would like to be offered that were not on the menu?	In the questionnaire you have tick those food, why these food?
In the questionnaire you chose (never-always) for food be brought in by your family, why is that?	What kind of food to they bring? How important it is for you to have the food?
Do you have any kind of food that is important to you when you are unwell?	Why those food?
During your stay, are there any foods you do not want to be offered?	Why is that? How would it affect you if you received this food?
In the questionnaire said that the menu option (vegetarian/non-vegetarian) you chose, was (never-always) acceptable, why is that?	If enjoy, which kind of food? If not enjoy, why? What do you think can improve this?
When you are in hospital, what spices would you like to see in the hospital food?	In what dishes? Why these spices?
When you are in hospital, how important is the temperature of the food to you?	Why is that? How would you describe the ideal temperature?
How important is the timing of the food served to you?	Why is that? How would it affect you?
How important is the use of correct cutlery with meals to you?	In the questionnaire you stated (never-always), what kind of cutlery?
**For Muslim During your stay, what are your opinion regarding the halal menu provided in this hospital?	What are the concern? How to improve it?
That is my last question, do you have any other comments you would like to add?	

9.5 APPENDIX E Focus group summary

E.i Hindu Focus Group summary findings

The focus group was carried out with the members of Auckland Indian Association on the 14th March 2018. It was held at Mahatma Ghandi Centre (MGC), Auckland. Eight Hindu Indian and South Asian participated in the focus group, with an equal number of male and female. The age range is of 40-79 years and belong to Indian ethnicity. Most of them were born in India, while one in New Zealand and one in Zambia. Only one has lived in New Zealand for less than 10 years, while the others have been living here for more than 10 years. It was identified in this focus group that most of them are vegetarian, while one practices non-vegetarian eating habit once in a while.

Question	Themes/Comments
Breakfast	<p>Tea and toast is the common breakfast on normal weekdays. It was also mentioned that most Indian will have tea and toast for breakfast due to not having enough time in the morning to prepare a full-cooked Indian breakfast.</p> <p>The tea they would normally have is Indian Masala tea. This is prepared by adding Masala water with normal teabags that can be found in supermarket. Milk and sugar are added according to preferences. The Masala powder consists of a mixture of ground ginger, cardamom, black pepper, cinnamon and nutmeg.</p> <p>**it was mentioned that they have it with soy milk is they do not prefer normal milk.</p> <p>One of them mentioned that some parts of South India, such as Madras and Kirla would prefer coffee instead of tea. They do take any types of coffee such as Nescafe, otherwise they will have their own rolled coffee.</p> <p>The common type of bread for toast is wholemeal bread. One of them mentioned having multigrain bread for their toast. Most of them usually have it with jam and butter. It was also mentioned that they will have their toast with pickled Masala to add a bit of spices. Some of the Indian household make their own pickled Masala, but it was mentioned that they can buy it from any Indian stores.</p> <p>Those who have family members preparing their breakfast, Rava (Semolina) or Poha (rice flakes) porridge is commonly served. It is an Indian-style porridge, in which the semolina or rice flakes is boiled in water and some Indian spices are added such as chilli, coriander and curry leaves. It was mentioned that tomatoes and mixed vegetables are also added as an option. They mentioned that the preparation is easy and it will take about 15 minutes to prepare it. The consistency is similar to normal porridge but smoother in texture as semolina and rice flakes are finely grounded ingredients.</p> <p>Their usual breakfast time is 9 am, or depending on the time they have to leave for work.</p>
Lunch	<p>Their normal lunch is usually Indian cuisines. It is roti or rice with vegetarian curries.</p>

	<p>Roti is the Indian flatbread made from wholemeal flour and water combined to make a dough. It was mentioned that some of them make the roti at home if they have the time, but most people would buy it from supermarket, or any Indian stores.</p> <p>**the types of rice that they prefer are basmati and jasmine rice.</p> <p>The vegetarian dishes that they usually have are vegetable curries or dhal curries. The vegetable curries are cooked with their common spices such as coriander, cumin and chili. Most of them will use any seasonal vegetables in their curries. Dhal or lentil curry is cooked with the same spices as the vegetable curries.</p> <p>**turmeric is commonly added in all Indian curries to add colour and a bit of flavour.</p> <p>They also mentioned having spicy yogurt curry for lunch. It is made with yogurt, and spices such as cumin, cardamom, chili, garlic and ginger.</p> <p>The participants mentioned that Indian population would prefer spicy food. The common ingredients that they would add to make the dishes spicy are chili, garlic and ginger.</p>
Dinner	<p>Their normal dinner are Indian cuisines as well. The dishes are similar to their lunch. They often have roti with Indian style curries.</p> <p>The type of roti that they would have is chapatti. It is made of wheatmeal flour and water. It is either purchased in stores or homemade, when they have the time to make the roti. One of them also mentioned that they would also have rice for dinner.</p> <p>The preparation of the vegetable and dhal curries are similar as mentioned in their lunch. They would often have seasonal vegetables with their curries, and mentioned that they would sometimes have broccoli, eggplants and cauliflower in their curries. It was also mentioned that they do not have any preferences on the type of vegetables. They are well adapted to most New Zealand vegetables and turn it into their own version of curries. They mentioned that fresh chili is important in their dishes.</p> <p>The dhal curries are either using mung dhal, or any types of lentils. The mung dhal is prepared by soaking the mung beans in water before making it into curry.</p> <p>There will be day to day variation on the type of curries. One participant mentioned that one day they would have vegetable curry, the other day they would have dhal.</p> <p>Non-vegetarian would include meat such as chicken and lamb, and fish in their dishes for dinner. It was mentioned that they would have meat every second day, and cooking it in non-Indian style such as crumbed fish if they do not want to have curry.</p> <p>It is mentioned that they often have dinner with family, and they would eat dinner around 8-9 pm depending on the time they are home from work. The children would usually wait for their parents to have dinner together.</p> <p>Dinner was mentioned as the main meal for most Indians especially during the weekdays as it is their biggest meal of the day.</p>

Snacks	<p>The common Indian snacks are Bhujia mix and Ghatia. Bhujia mix is a mix of lentils, peanuts, chickpeas and corn, and Ghatia is a deep fried snacks which is made of pea flour. Both of them are savoury snacks and are available in many Indian stores. Some of Indian household would make their own version of these snacks in which they can add their own spices to it.</p> <p>Some of participants would have biscuits with tea or coffee for their snacks. The biscuits are of the ones that are available in supermarket. The common tea for snacks is the Masala tea.</p>
Difficulties	<p>The participants have no difficulties sourcing the ingredients, as they have mentioned that 90% of the ingredients that they normally used are available in supermarkets or Indian stores. Some of them even make their own version of the food that they would have such as pickled masala, Masala powder, Ghatia snacks and roti.</p> <p>The participants also mentioned that most Indians grow their own vegetables at home such as chili, peas and eggplant. Therefore, sourcing their common vegetables are not an issue. As mentioned earlier, most of them are adapted to New Zealand vegetables.</p> <p>They also do not have any issues with the cost of the products or ingredients. One of them mentioned that they can buy the products in bulk, such as lentils or spices, therefore it is cheaper.</p> <p>Most of the food that they usually have in their normal days do not require long preparation time. If they do not have the time to make the food, they can buy it from stores.</p>
Unwell food	<p>The participants mentioned that they would have light and simple food when they are unwell such as moong dhal, lentil soup or yogurt curry, and they would have it with rice.</p> <p>They mentioned that they would prefer food that are not solid, and do not require much chewing. One person mentioned that having liquid food would make their digestion easier. They also mentioned that they usually have rice when they are sick. The common unwell food that were mentioned a lot were having rice with light vegetable or yogurt curry, and khichri.</p> <p>Khichri is a mixture rice and lentils cooked together. The consistency is similar to rice porridge. The skin of the lentils are removed to make it smoother. They sometimes have it with yogurt curry to complement.</p> <p>The ingredients for the yogurt curry are pea flour as thickener, yogurt, fresh chilies, fresh coriander, fresh ginger, garlic, and cumin powder. They would add spinach as well. Spinach is smooth and easier to chew when it is cooked, therefore most of the participants would add spinach as their vegetables in most of their dishes, especially curries.</p> <p>The participants mentioned that the non-vegetarian would have chicken, lamb, or sometimes fish when they are unwell. They do not have bacon (pork) or beef, and prawn or any type of shellfish are not normally eaten when they are sick. The common dishes are chicken and lamb curries, which are cooked the same way as the vegetarian curries mentioned before. However, one participant mentioned that they would usually have vegetarian dishes at their initial stage of illness, then would prefer the non-vegetarian dishes when they are improving.</p>

	<p>The drinks that they would have when they are sick is the Indian Masala tea as mentioned in Breakfast section. This Masala tea is a common drink the Indian people would have in their everyday basis. They mentioned that having this drink is a must for sick people as the ingredients in the Masala powder will help to warm up their body.</p> <p>The participants also mentioned that they preferred hot and fresh food when they are sick. One example was having food that are fresh cooked rather than having food that are warmed up, or food that comes out from fridge and reheated.</p>
Healing Ingredients/Food	<p>The healing food they mentioned are yogurt curry, ginger, turmeric, garlic and moong beans. They mentioned that turmeric is full of antibodies and anti-cancer, and ginger and garlic can warm up their bodies. They often have these ingredients either in their tea, or added in their curries.</p> <p>Wheat flour soup was also mentioned as being source of energy when they are unwell. It contains carbohydrate which will give energy, and they would add garlic as well. They would make it hot, and either sweet or savoury.</p>
Cultural/Religion influences	<p>The participants mentioned that the food that they prefer when are unwell are influenced by both culture and religion. They would often have rice and light curries, as these are the familiar or comfort food which they would usually have every day.</p> <p>It was also mentioned that as majority of Indian people are vegetarian due to their religious belief which is Hindu, they would prefer vegetarian dishes when are unwell. Those who practices non-vegetarian would have chicken or lamb in their dishes, but not pork and beef.</p>
Hospital Experience	<p>The participants did not have any complaints regarding the quality and the meals served in their recent food experience in hospital as most hospitals do have vegetarian option in their menu.</p> <p>One participant mentioned that he had a good experience with having vegetarian option, and egg in most of his meals during his stay in hospital. They also mentioned that they are used to the European style of food, and would have them as they are lighter.</p> <p>The participants mentioned that the older generation would still prefer having Indian dishes. The participants do bring in food to their family members especially curries and the Indian Masala tea. Some of their dishes include spinach and roti, rice and moong dhal, eggplants and potatoes, and fruits as well. They mentioned that people above the age of 65 years would prefer Indian food, however that would also depending on the preference of the individuals.</p> <p>They also mentioned that they feel the hospital are improving regarding sensitivity on cultural or religious belief, and the availability of vegetarian option in their menu. One participant shared their hospital stay experience back in 1985 where they do not have a lot of vegetarian option, and they would just took out meat in a meat soup if they were identified as vegetarian. However, hospital are more culturally sensitive now. One example mentioned was that they serve them yogurt with no beef gelatine if they are on vegetarian option.</p>

<p>Hospital Expectations</p>	<p>The participants mentioned that adding Indian Masala tea into their menu would be very beneficial to Indian patients. The hospital can start with the Masala tea bag, or commonly called chai in most supermarket. Even though the taste are slightly different from adding actual Masala powder into their tea, but it is a good start for the hospital. Also, Parle biscuits (glucose biscuits) would be good to have it with the tea. This biscuits are available in many Indian stores. They mentioned that they would feel like they are well looked after. Rice and chapatti would be a good addition to their menu for the older generation.</p> <p>The participants mentioned that most Indian people are not very fussy on having Indian dishes in hospital, and by having the vegetarian option in menu is acceptable. They are more concern about their health, and expect good treatment from doctors and staffs.</p> <p>The utensils that they would prefer is spoon rather than fork and knife. They do not have any preference on the type of bowls or plate the food is served. However, having spoon is important for them.</p>
<p>Utensils</p>	
<p>Other comments</p>	<p>One participant shared that it is usually doctors who would prescribed the food for them when they are in hospital in India. They would have fruits, and light and simple food which are not oily. Most of their food are vegetarian dishes.</p> <p>The participants also mentioned Parle biscuits served to them in hospital, and this biscuit is popular in India. However, some doctors have stopped prescribing these biscuits to patients as they believe it increases constipation problem, therefore they changed it to Marie biscuits. These biscuits are usually eaten with the Indian Masala tea.</p>

**information gathered from pilot focus group

E.ii Muslim Focus group summary findings

The focus group was carried out with the members of New Zealand Muslim Association on the 7th April 2018. It was held at Avondale Islamic Centre, Auckland. Seven Muslim Indian and South Asian participated in the focus group, consisting of all male participants. The age range is of 30-79 years with four of the participants belong to Indian ethnicity, while two Bangladeshi and one Sri Lankan. Four participants lived in New Zealand less than 10 years, while the other three participants have lived here for 10-40 years.

It was informed in the beginning of the focus group most of the participants are quite “kiwi-fied”, and they eat multiple types of cuisine and it varies day to day.

Question	Themes/Comments
Breakfast	<p>Most of the participants have western-style breakfast consisting of toast, cereal and fruits. The type of bread they usually have are wholemeal and wheatmeal bread. They often have the toast with butter and jam, or poached or fried egg, and seldom with baked beans and canned spaghetti. They are much adapted to New Zealand common breakfast such as oats, weetbix, cornflakes and muesli, and would have the cereals that are available from supermarket. Fresh fruits such as banana and apple are their common type of fruit to have for breakfast. One participant mentioned cutting up several type of fruits depending on the season to make fruit salad.</p> <p>Tea is the common drink for breakfast. Most of the participants would have the normal teabags from the supermarket, and they usually would add milk in it with sugar according to preferences. One participant mentioned having Indian Masala tea for breakfast.</p> <p>However, some of them do incorporate their cultural food into breakfast. One participant mentioned having curry with toast, and sometimes would have string hoppers (Sri Lankan type noodles) or hoppers (thin Sri Lankan pancakes). Another participant also mentioned having roti with vegetable or dhal curry for breakfast.</p>
Lunch	<p>The common type of lunch of most participants is rice or roti with curries. The curries vary from the many types of meat, also vegetables and lentils.</p> <p>The vegetables that were commonly mentioned are butternut, pumpkin, kumara, potatoes, cauliflower and broccoli, however, they also mentioned that it is mostly depends on the seasons as seasonal vegetables are often cheaper. They can incorporate most of the vegetables sold in supermarket into their dishes. Dhal curry is also another type of curry that is often have with rice for lunch. One participant mentioned having a dish called akhni which is a mixture of rice and dhal cooked together and complimented with yogurt curry as a side. Fresh tomato chutney was also mentioned as one of the sides with their rice dishes.</p> <p>Most Muslim Indian and South Asian would have meat in their dishes. The meats are usually chicken, lamb and beef. The Bangladeshi would prefer more fish as they are used to having more fish in their country. The common fish was mullet roe, but it was mentioned that they would prefer anything from the local market. These meats are often cooked as curry dishes, which the ingredients are similar to how they cook</p>

	<p>their vegetable or dhal curries. Most of them mentioned Indian spices such as turmeric, garlic, ginger, cardamom and chili as the main spices in their curries.</p> <p>The common type of rice that they would have is basmati rice. One participant mentioned having mostly Samba rice, and one mentioned parboiled rice as their usual type of rice for their household.</p> <p>Some of the participants also mentioned having dessert in lunch is common in their culture. Sweet rice dish called Zarda is a traditional dessert from the Indian subcontinent, which it includes milk, sugar, cardamom and nut such as pistachio. The other dessert that was mentioned was Halwa, which is an Indian pudding made of semolina. It was informed that Gujarati people would have a sweet dish or dessert before their meal. The rest of the participants did not mentioned about dessert, but rather having fruits such as apples and banana.</p> <p>It was also mentioned that these are the lunch at home, and most of the days it varies. One participant mentioned having sandwiches or kebab if he is busy working or on the road. The bread was either the multigrain bread, or pita pocket for kebab. It is usually with smoked salmon, carrots, tomato and cheese.</p> <p>Half of the participants mentioned that lunch is their main meal of the day, as they have more food in lunch compared to dinner.</p>
Dinner	<p>Their dinner is quite the similar to their lunch, rice or roti with curries. The curries include the meat curries, or vegetables and dhal curries.</p> <p>They mentioned having two types of meat dishes, mainly cooked in curry, a salad and rice as their usual dinner. The type of rice they usually use is basmati rice. The Sri Lankan participants mentioned having similar type of dinner with the lunch dishes, which are rice, roti or string hoppers with curries. They also mentioned that if they cooked dry curry, they would have it with roti, and more liquid curry with rice. The meat that they mentioned for their curries are chicken, lamb, and beef. Fish was also mentioned, and it includes, salmon and tuna. Muslim people will not have pork, or any pork based products in any of their meals due to their religion beliefs.</p> <p>Some of the participants mentioned that they would have their curries or dishes non-spicy, and would have it in lesser quantity compared to their lunch. These are the participants who mentioned that lunch is their main meal.</p> <p>One participant mentioned having yogurt for dessert, topped with fruits and nuts. Fruits are usually the seasonal fruits. They would also have Kheer, it is a rice pudding.</p> <p>They mentioned that they usually would have dinner with family, therefore all of the family members would sit on a table and eat dinner together. However, this depends on their availability.</p>
Snacks	<p>Fresh fruits are the common snacks in this group. Mostly are banana, peaches and apples, but they do mentioned they would have seasonal fruits because it is cheaper. They also mentioned having the common</p>

	<p>snacks that are available in supermarkets, such as cheese and crackers, biscuits, and also mixed nuts.</p> <p>Some of them would have dates, or honey on toast with cup of tea and coffee as snacks.</p>
Difficulties	<p>The participants mentioned of not having any difficulties in sourcing the ingredients and spices in New Zealand. Most of them are available in supermarket and many Asian stores. They also do not have any problems with the cost for the ingredients, as they would buy depending on seasons. Most of the participants also mentioned that they are well adapted to the New Zealand food.</p> <p>One participant mentioned that string hoppars is quite difficult to find it in New Zealand, however most of the Sri Lankan spices are similar to Indian spices with much stronger taste.</p>
Changes in preferences when unwell	<p>Four participants mentioned that there are no changes of their food preferences when they are unwell. Most of them would eat similar food as their normal eating habits. This is because these foods are considered as comfort food, and they would still prefer them when they are unwell.</p> <p>The other participants did mentioned having light, and non-spicy food when they are sick. They would have meat and vegetable soup, or dhal curry with rice, as it is more liquid and it is easier to chew and swallow. The meat and vegetables are cut in fine pieces, and cooked for a long time to make it tender. They also mentioned having rice porridge or congee with meat and vegetables. It is usually cooked with carrots, beans, or mixed vegetables, and the meats are either chicken or beef.</p> <p>One participant mentioned having spicy beef curry with roti, or fried fish when they are sick. This is because of the loss of taste when they are sick, and the need of having more intense flavour to complement, or to make them eat more. They would add fresh chillies in their dishes to make it hot.</p> <p>The temperature of the food are preferred hot, with steam when it is served. As they are sick or having cold, hot food would comfort them, and make them feel better.</p>
Healing food	<p>Date and honey are the common healing food for Muslim group, as it is mentioned in their religion beliefs. Most of the participants would have dates when they are unwell, and they would also have them every day during fasting month. It is believed to have many health benefits of eating dates such as diarrhoea, stroke and anti-inflammatory diseases.</p> <p>They also mentioned having bitter melon in their dishes as it is good for stomach and help with digestion. Hot milk is also mentioned with the reason of it is good for their heart. One participant mentioned having hot milo with honey and nutmeg, as this will help them to rest better. Another participant mentioned having curd with coconut syrup when they are sick. Most of the food mentioned are based on their culture and experiences when they had in their country, and their usual intake prepared by their families when they are sick.</p>
Hospital Experiences	<p>The participants did not have any complaints regarding the taste of the food served in hospital, however, some food-related services needed</p>

	<p>improvement. One participants mentioned that he had chosen vegetarian option when he stayed in hospital, however he was served ham sandwiches. They mentioned that most of them would still choose vegetarian option, even though some hospitals do offer halal option to Muslim people. This is because they are not confident with the halal meat available, and the cross-contamination in the kitchen.</p> <p>Most of the participants were likely to bring in food to their family members that were admitted. One participant mentioned that his wife did not prefer the hospital food as it was not spicy enough for them. She did not like the steamed vegetables that were served, and would prefer vegetable curries instead. They mentioned that rice was available to them, therefore he would bring in some curries or other spicy dishes to their wife.</p>
Hospital Expectations	<p>Halal food or Halal food options were mostly mentioned in the discussion on their expectations on hospital food services. They mentioned that the hospitals that served halal options should have a certification from FIANZ, the Federation of Islamic Association New Zealand. The certification would give assurance to the Muslim patients about the Halal options in hospitals. FIANZ can audit the halal food production, including the food and preparation area.</p> <p>They suggested having Halal labels on the packaging of the food served or the menu list, therefore the hospital staffs and the patients will not get confused on the food that is served. This will easily identify Halal food, making it easier for the kitchen staffs as well.</p> <p>They also mentioned that they would prefer rice or roti with curries, either vegetables, dhal or meat curries in the hospital food. Bangladeshi would prefer fish curries instead. They mentioned that it is especially for the older generation. Their generation are fine with the hospital food as long as it is edible and halal.</p>
Utensils	<p>They would prefer having spoon instead of fork and knife. They do not have any preferences on the type of plates or bowls the food are served.</p>

9.6 APPENDIX F Application to practice (Recipe)

F.i Sample recipe

Recipe for Plain Khichri (83)

Ingredients (Serving for two)

Rice 28g

Lentils 28g

Bay Leaf 0.5g

Ghee 14g

Onion 7g

Cumin 1g

Salt 2g

Water 180g

Procedure

Sliced onions are sautéed in melted ghee or vanaspati in a pan. Cumin and bay leaf are added and stirred in. Cleaned and washed rice and lentils are added into the pan and sautéed for 3 minutes. Hot water is then added, stirred well and cooked on low heat for about 20 minutes until the grains are soft cooked and the water is fully absorbed.

F. ii Nutrient Analysis of preferred Indian and South Asian foods

Nutrient	Energy (kJ)	Carbohydrate s (g)	Protein (g)	Fats (g)
Food				
Basmati Rice (<i>100g</i>) (85)	1455	77.65	8.35	0.41
Chapati (<i>46g/piece</i>) (84)	600	21.48	3.08	5.01
Dhal curry (<i>1 serving/1.74.8g</i>) (84)	556	14.16	10.49	4.02
Khichri (<i>100g</i>) (83)	683	17.7	5.1	7.4
Idli (<i>39g/piece</i>) (86)	243	12	1.6	0.4
Vegetable curry (pumpkin and long beans) (<i>1 serving/133.3g</i>) (84)	374	4.96	3.2	6.27
Chicken curry (<i>77g/1 serving</i>) (85)	849	2.9	17	13.7
Masala tea (<i>1 cup</i>) (87)	243	12	2	2